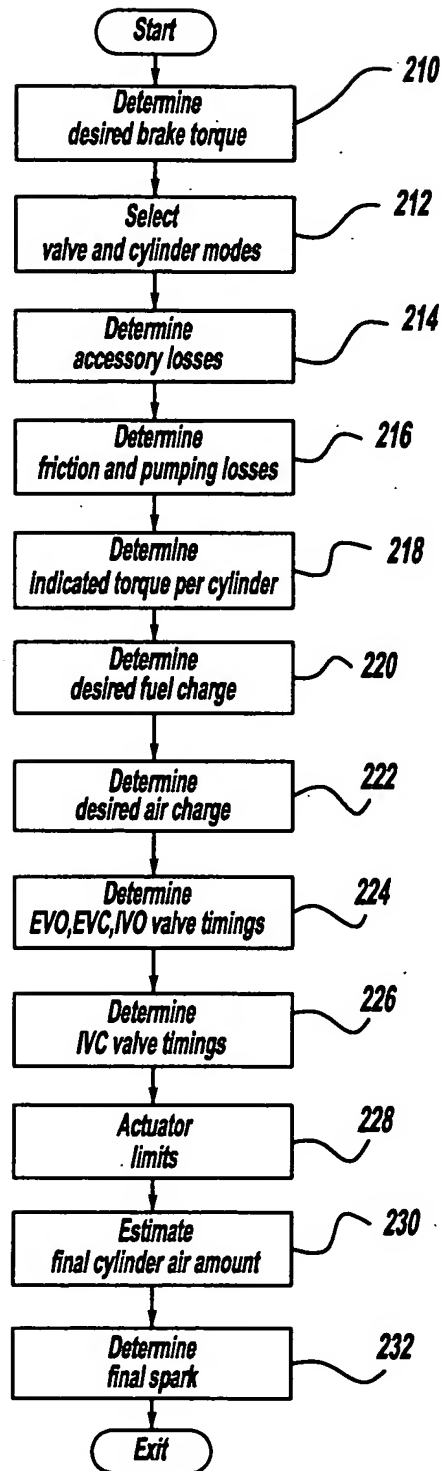
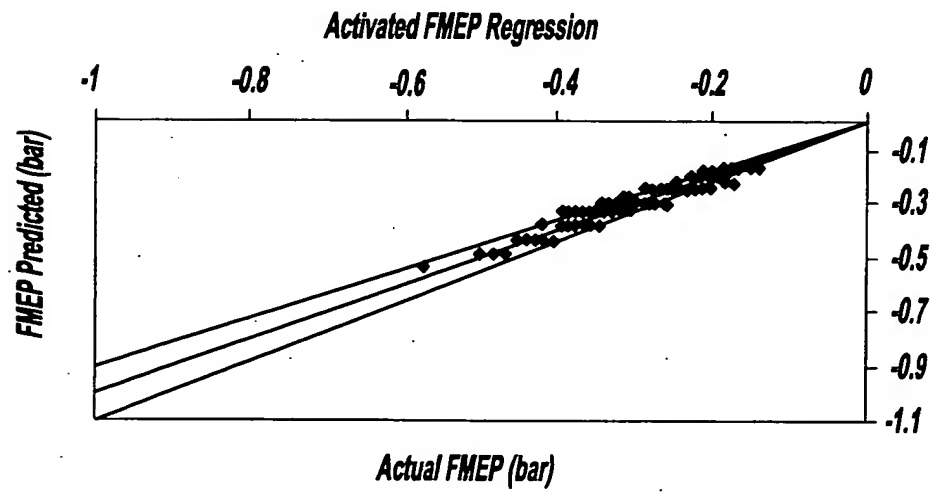
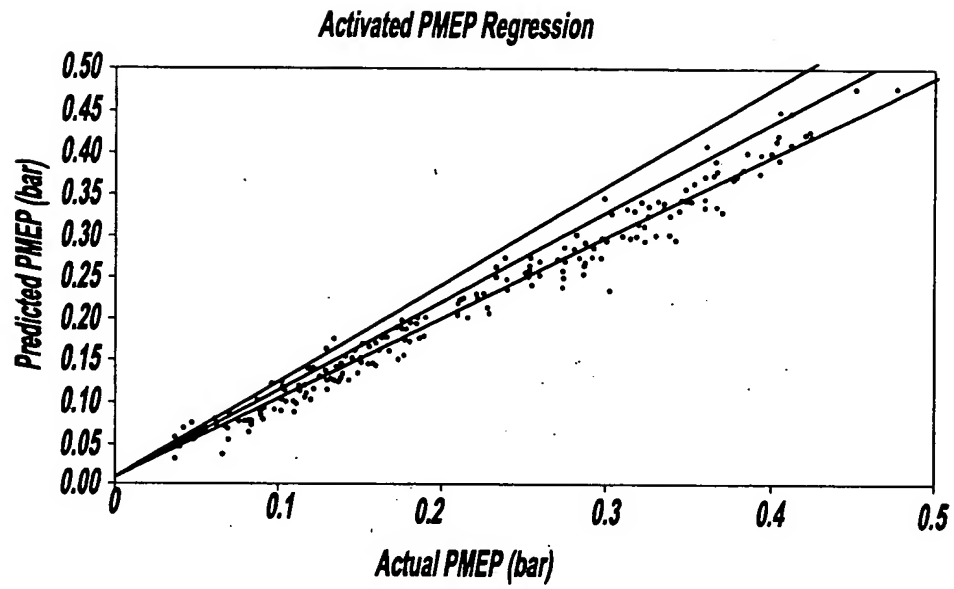
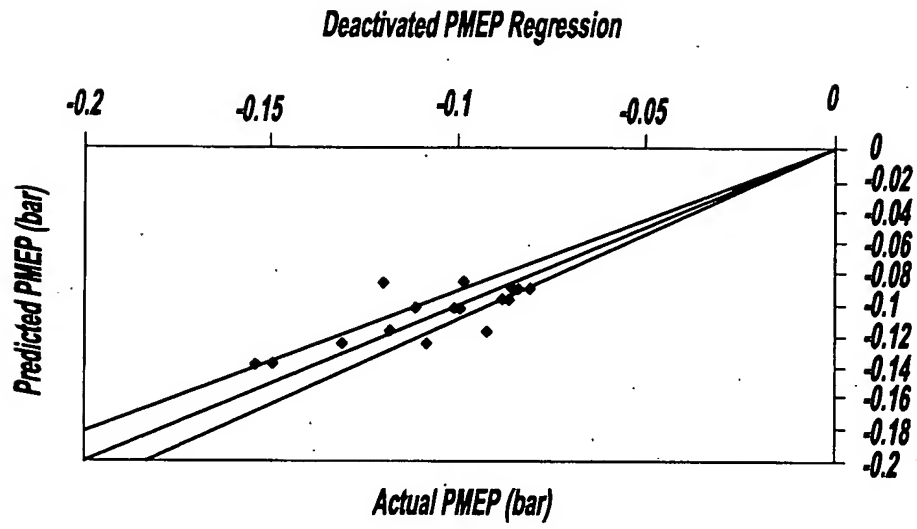
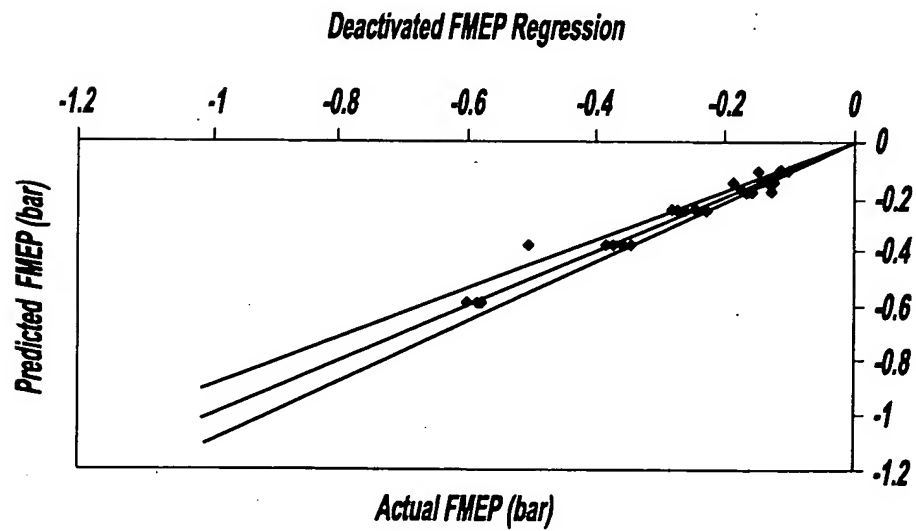
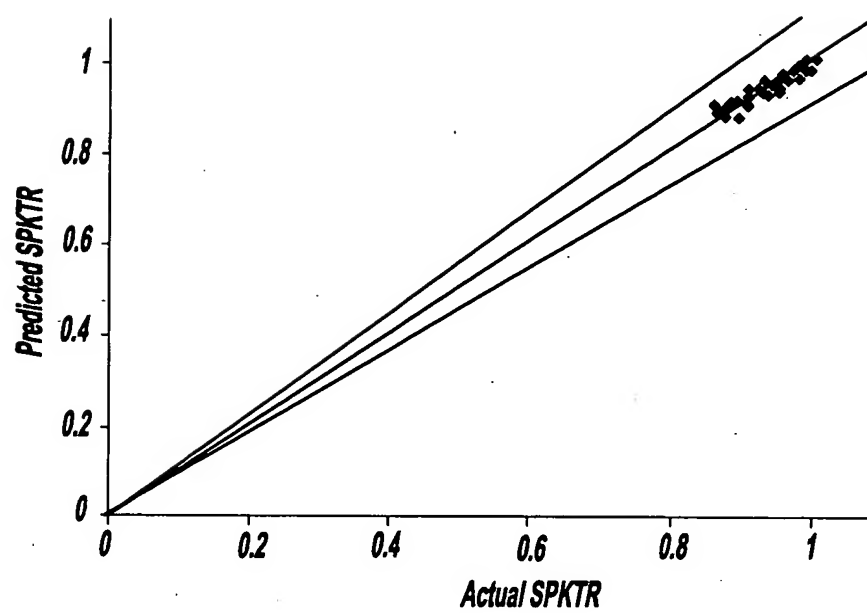
**FIG-1**

**FIG - 2**



**FIG - 5****FIG - 6**

Spark Retard Torque Reduction Regression**FIG - 7**

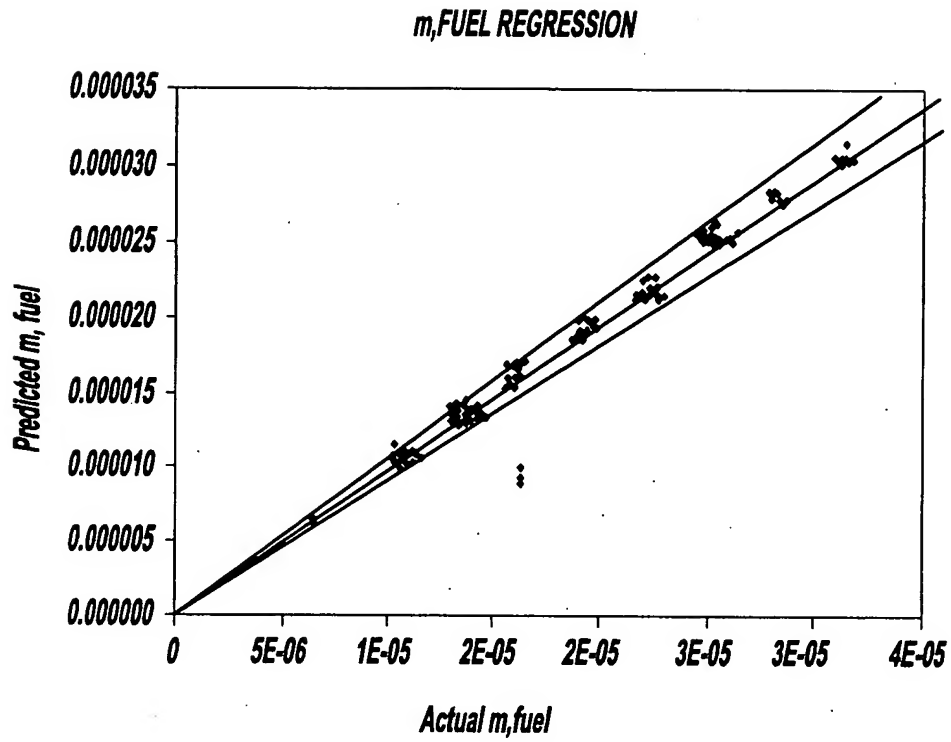


FIG - 8

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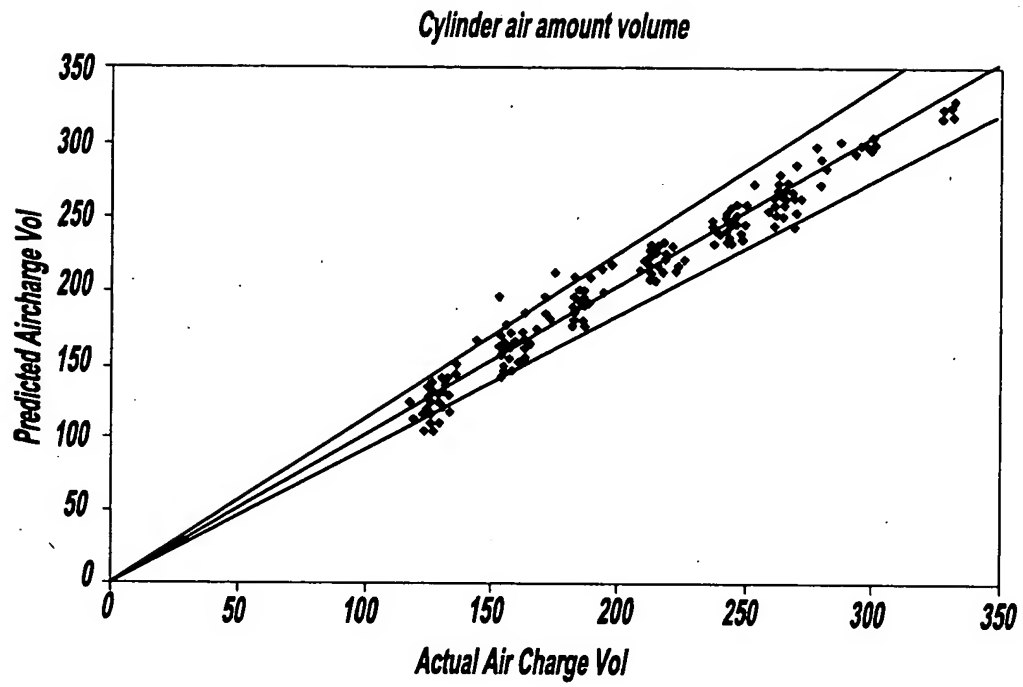
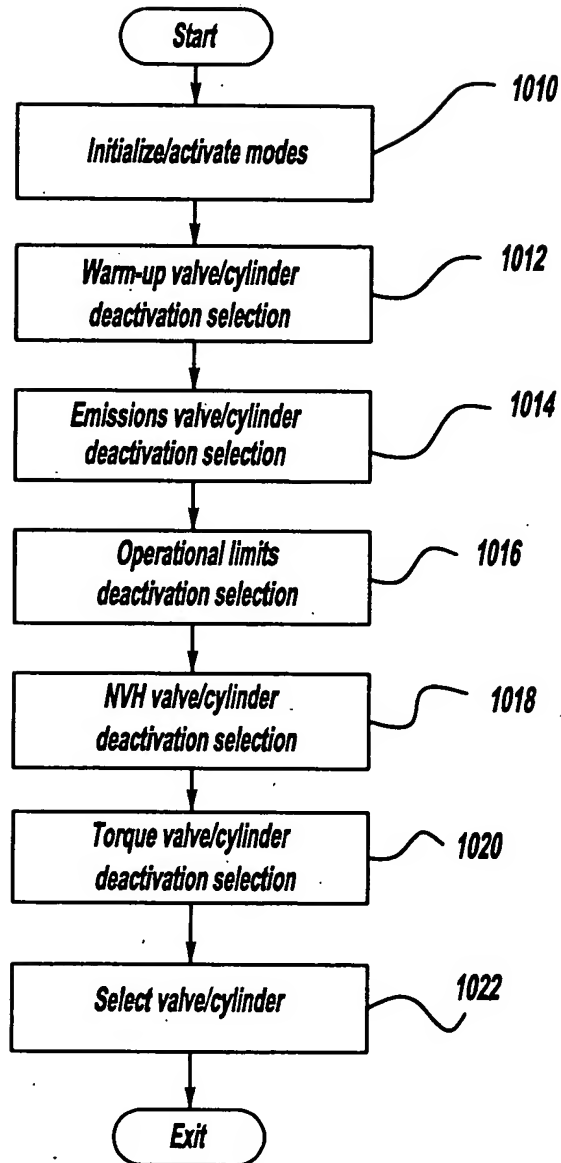


FIG - 9

**FIG - 10**

COLUMN 0 COLUMN 3

0 3

↓ DECREASING TORQUE ↑

V2	1	1	1	1	ROW 3
12-STROKE	1	1	1	1	
V4	1	1	1	1	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

← DECREASING TORQUE →

FIG - 11

COLUMN 0 COLUMN 3

0 3

↓ DECREASING TORQUE ↑

V2	0	0	0	0	ROW 3
12-STROKE	0	0	0	0	
V4	1	1	0	0	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

← DECREASING TORQUE →

FIG - 12

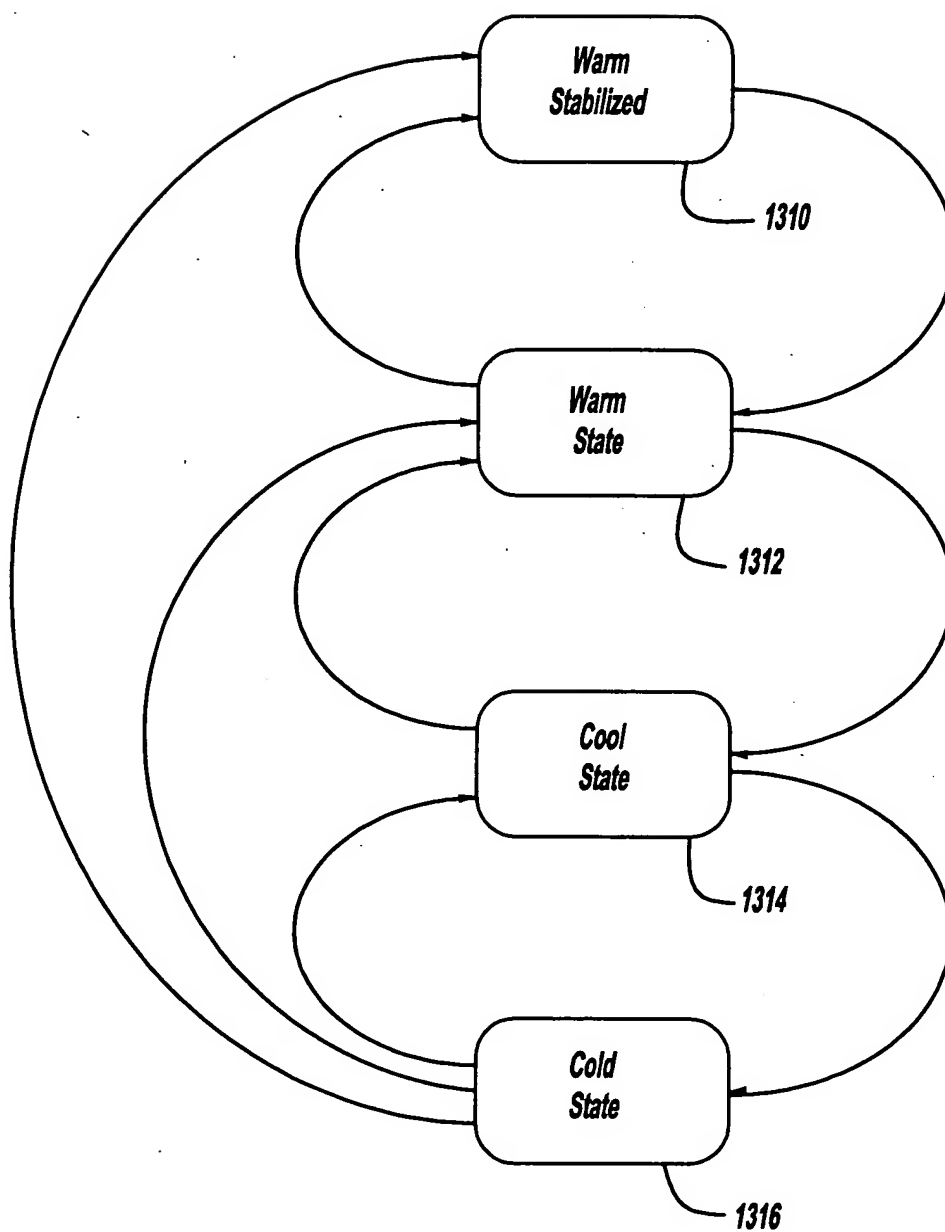


FIG - 13

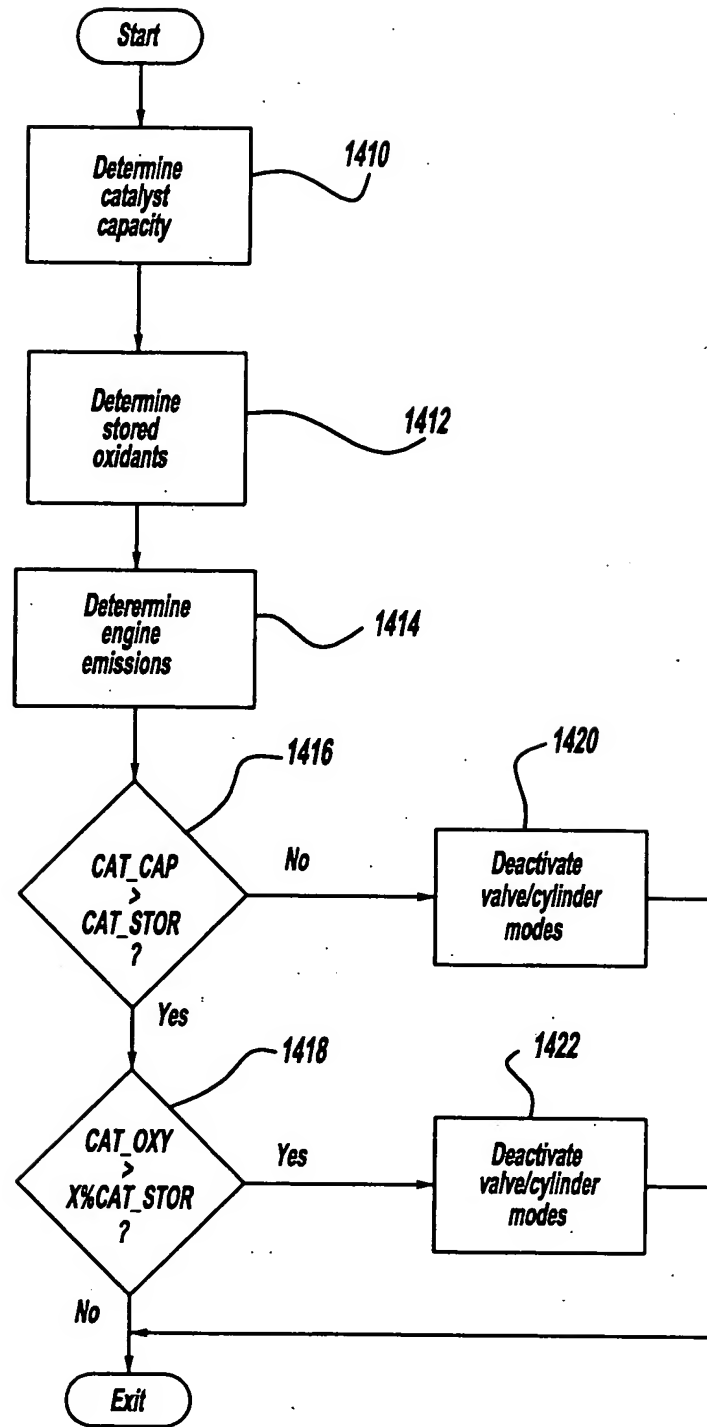
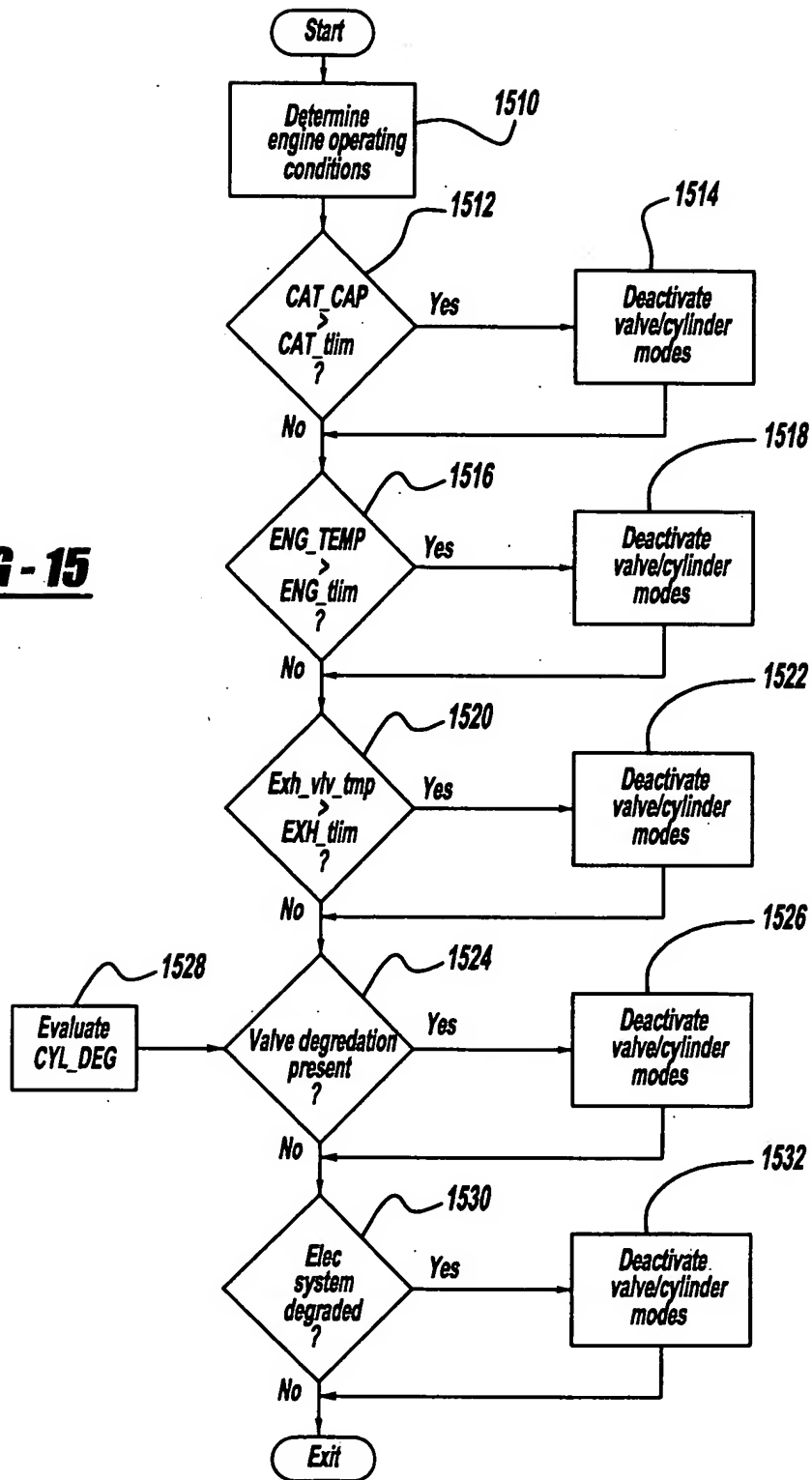
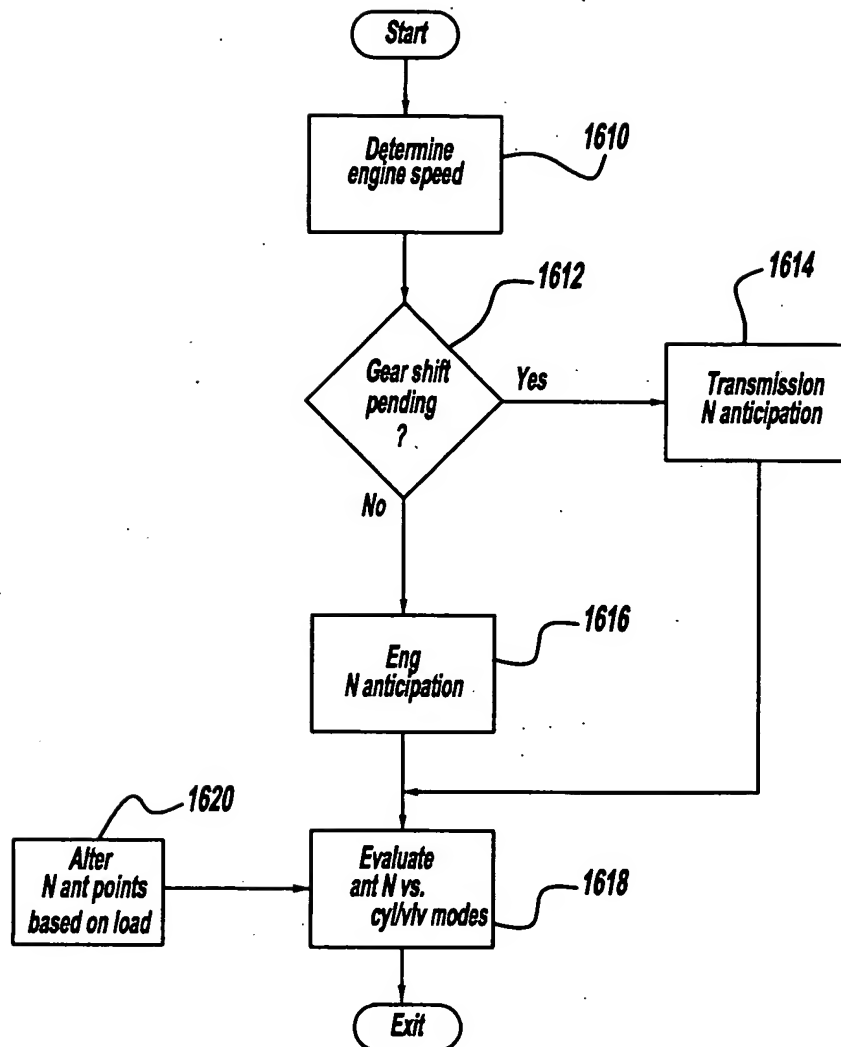
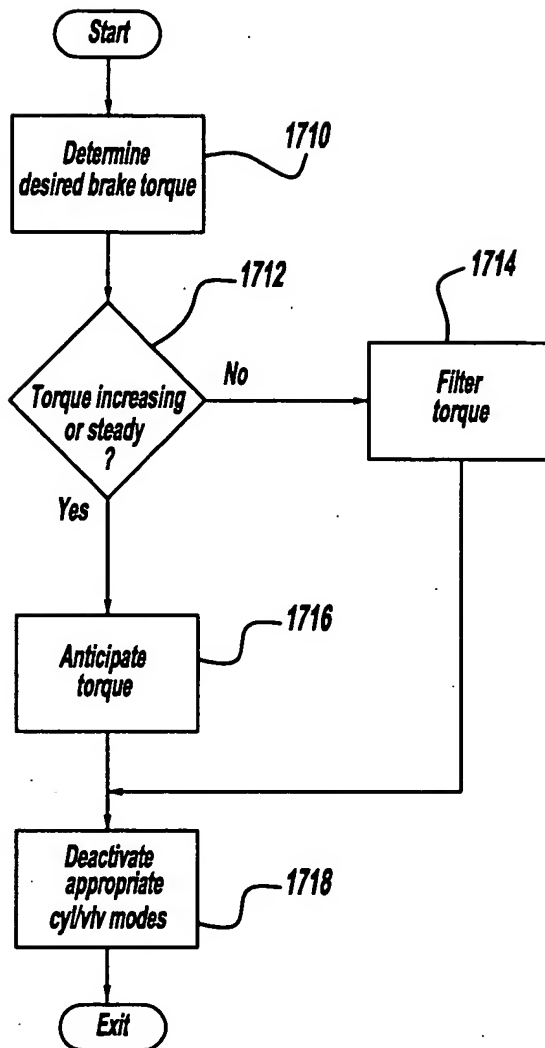
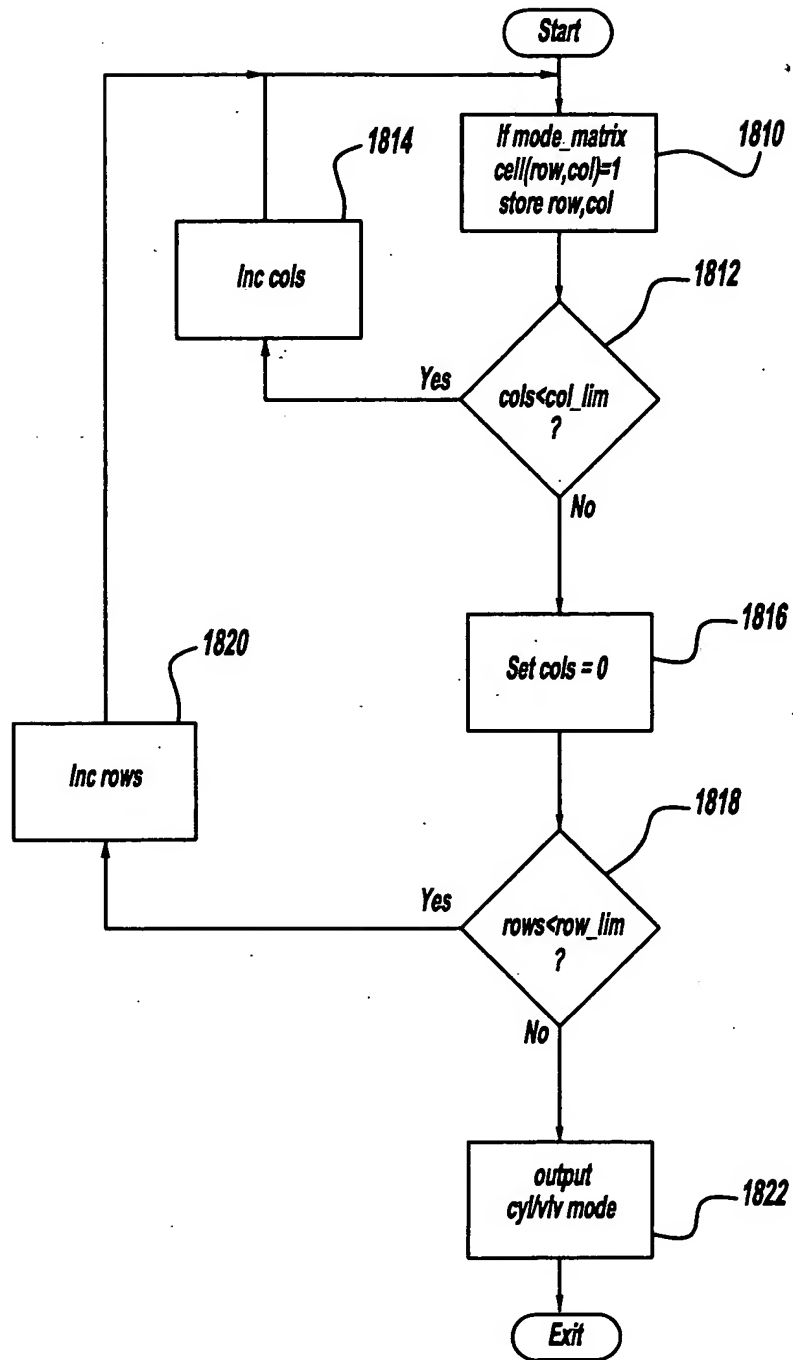
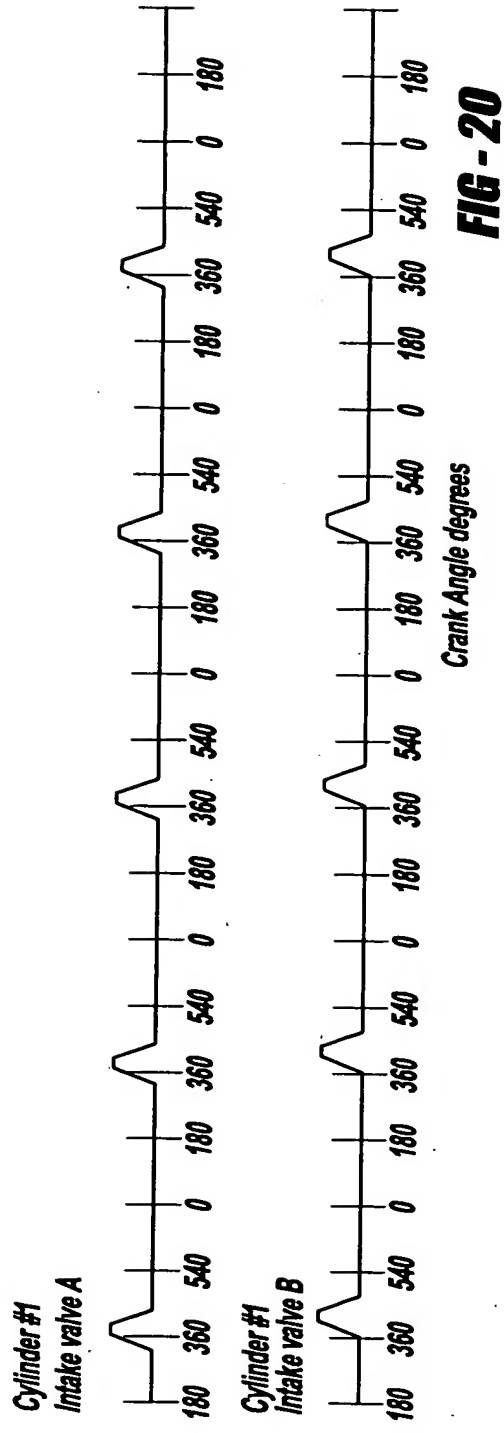
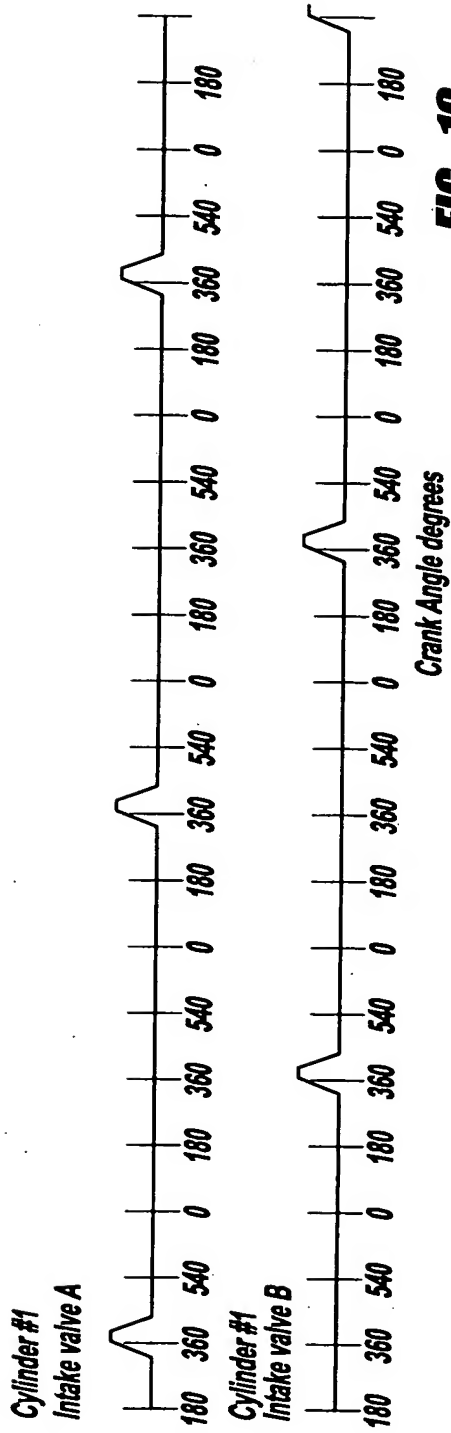
FIG - 14

FIG - 15

**FIG - 16**

**FIG - 17**

**FIG - 18**



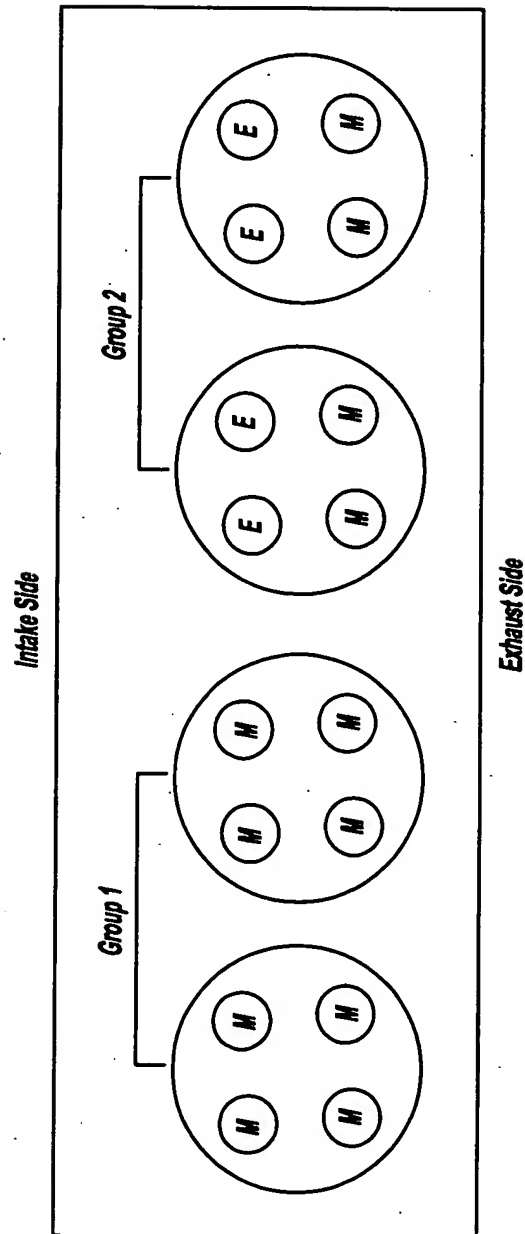


FIG - 21

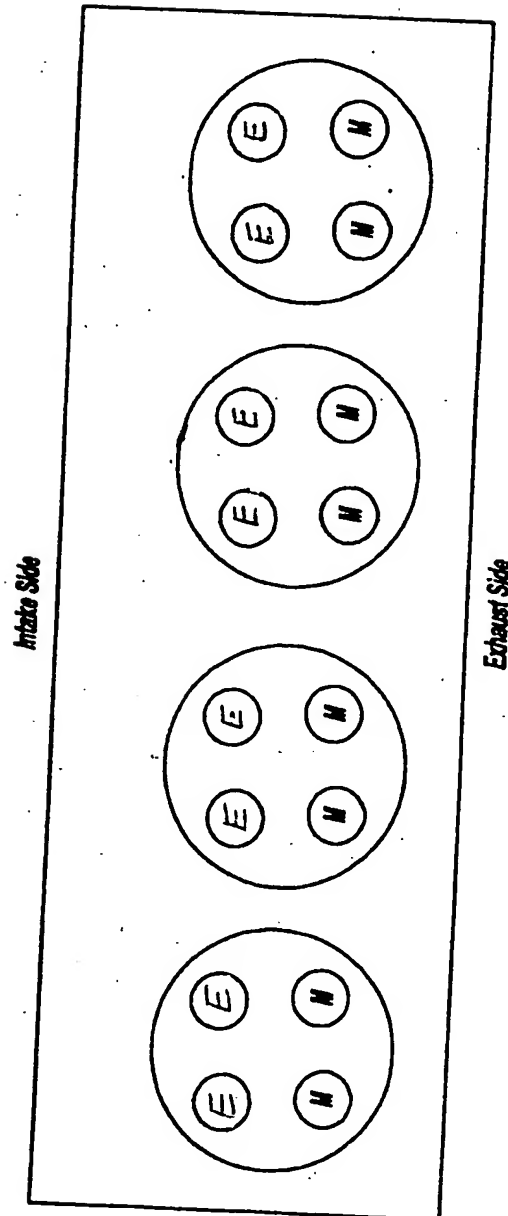


FIG - 21A

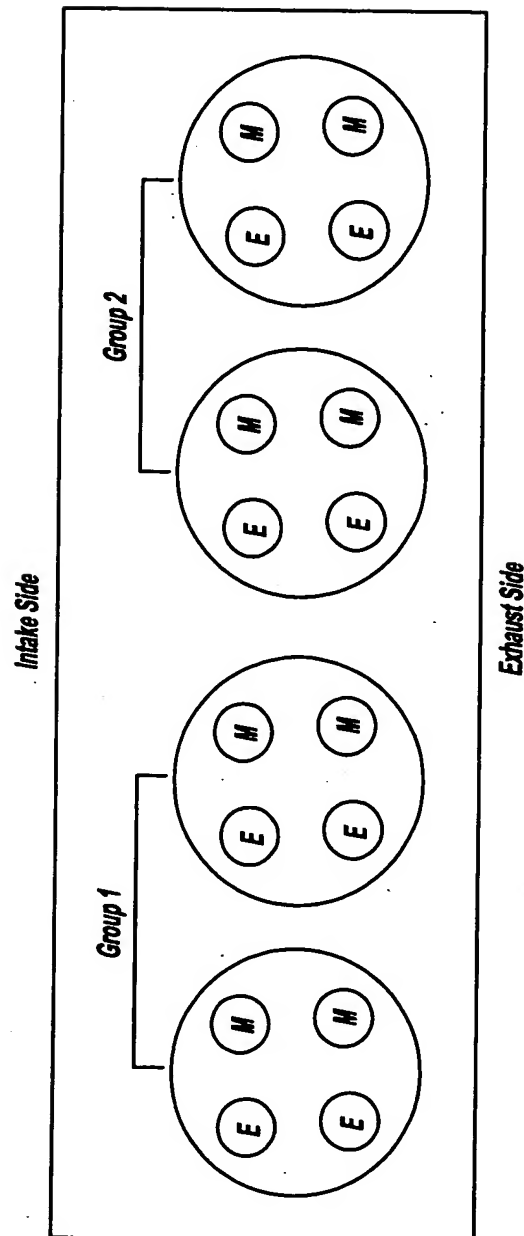


FIG - 22

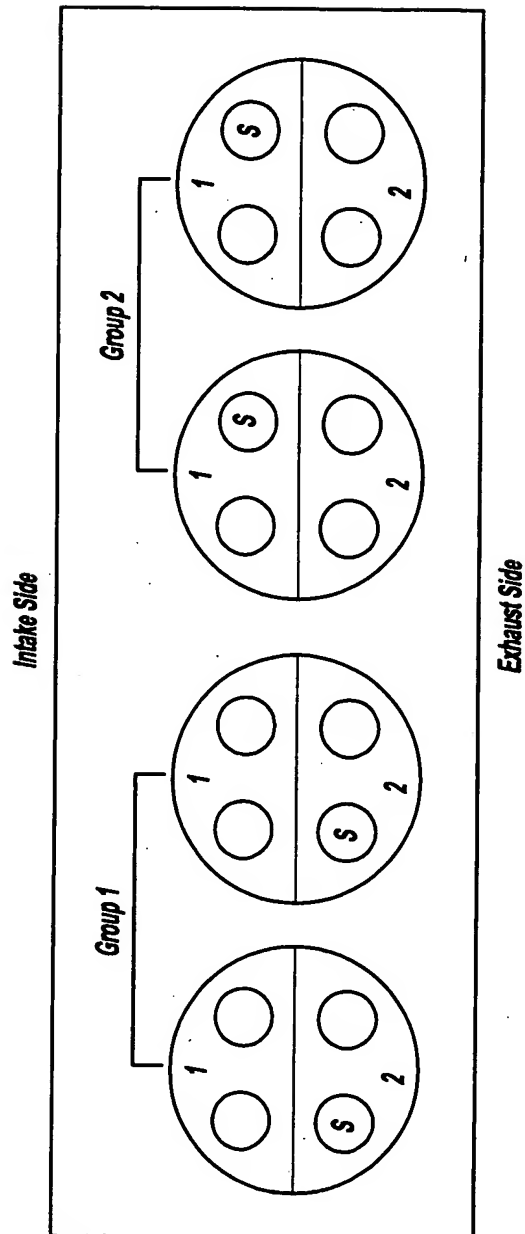


FIG - 23

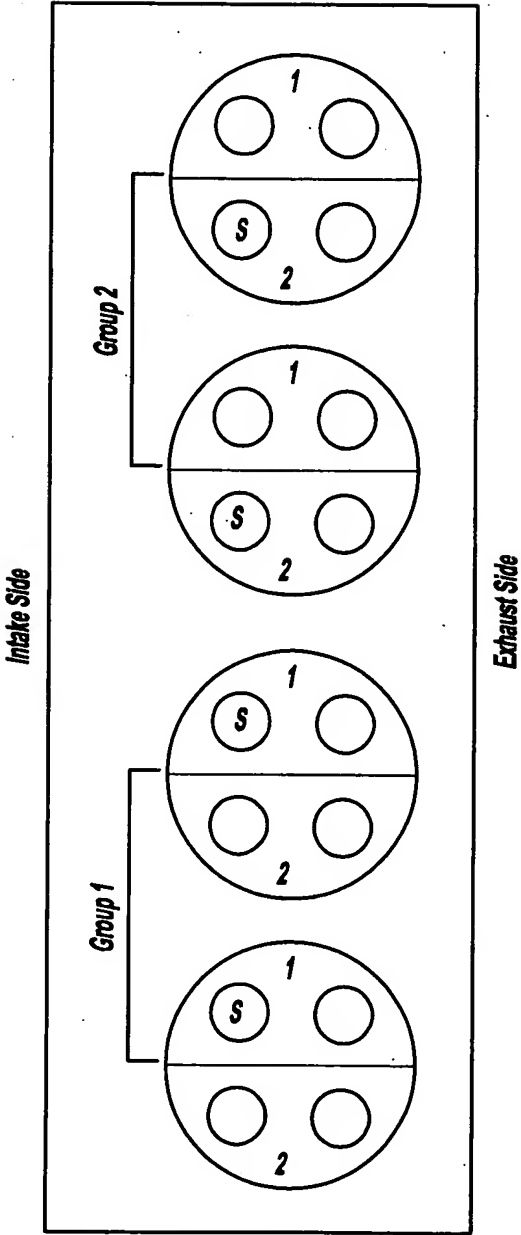


FIG - 24

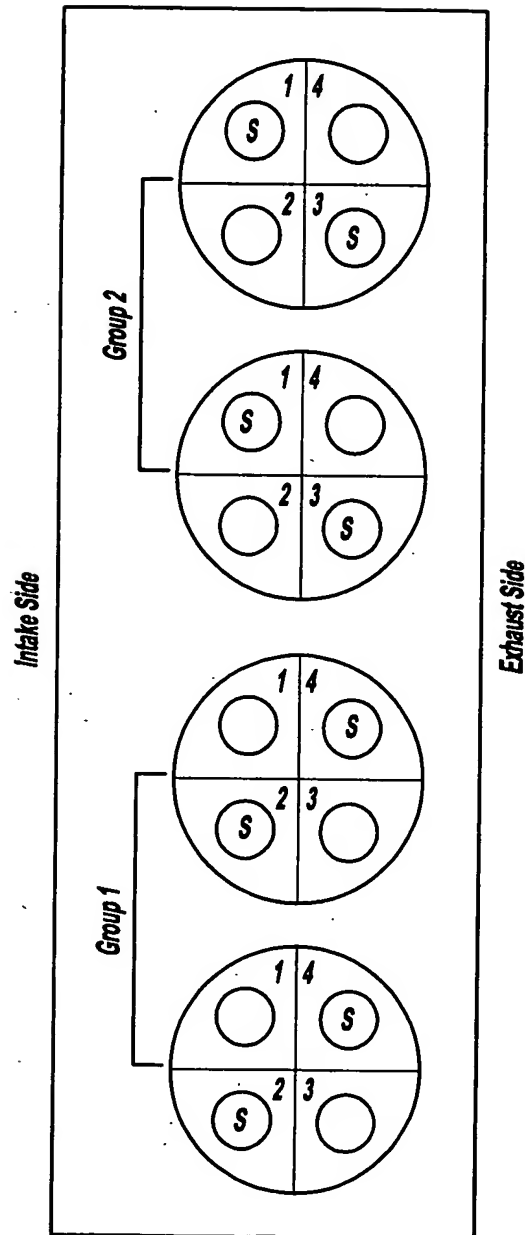


FIG - 25

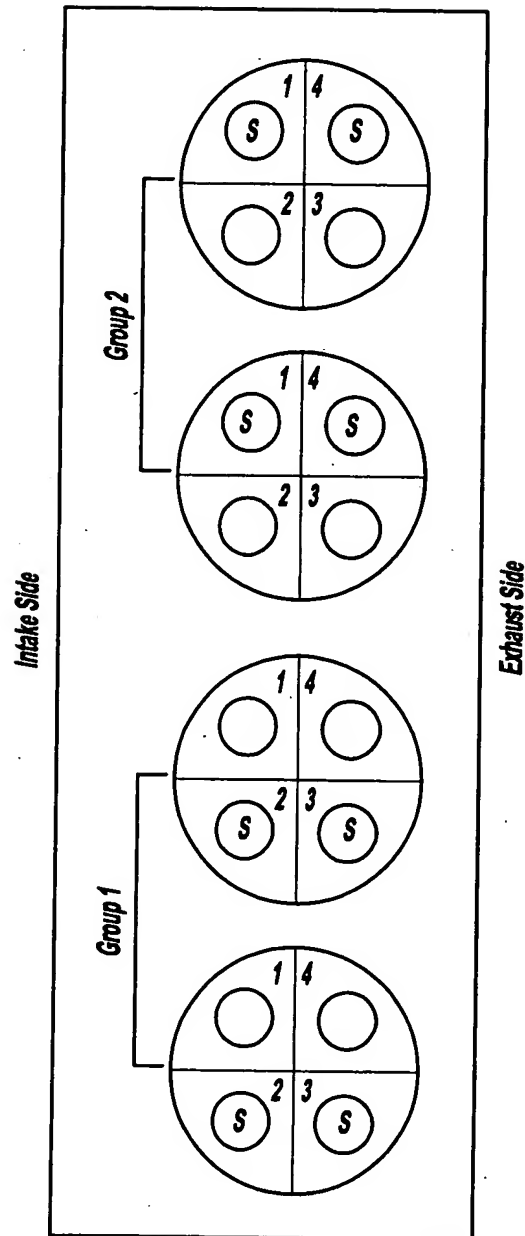


FIG - 26

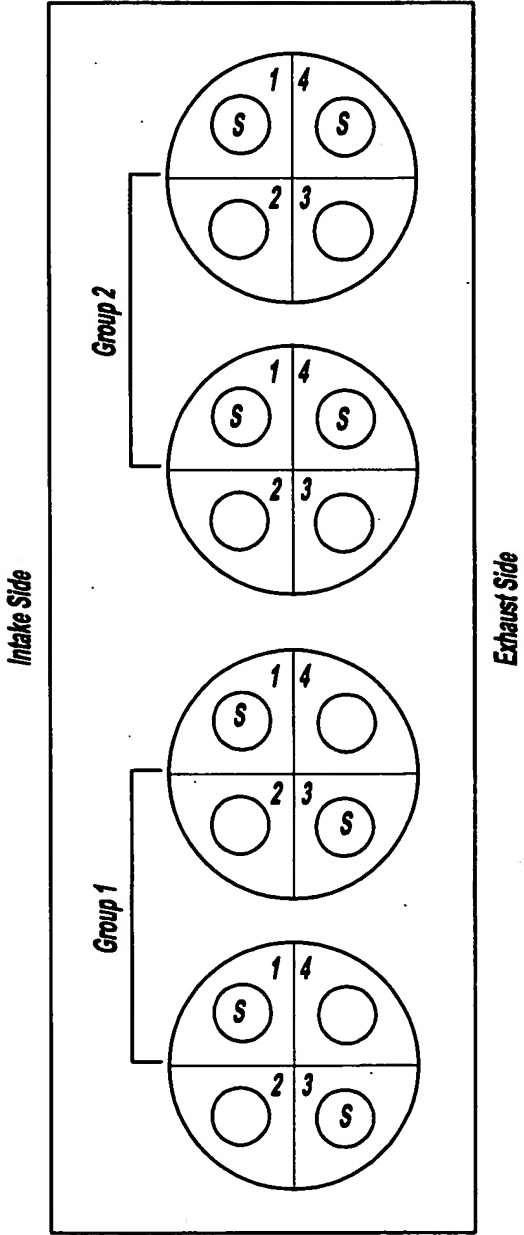


FIG - 27

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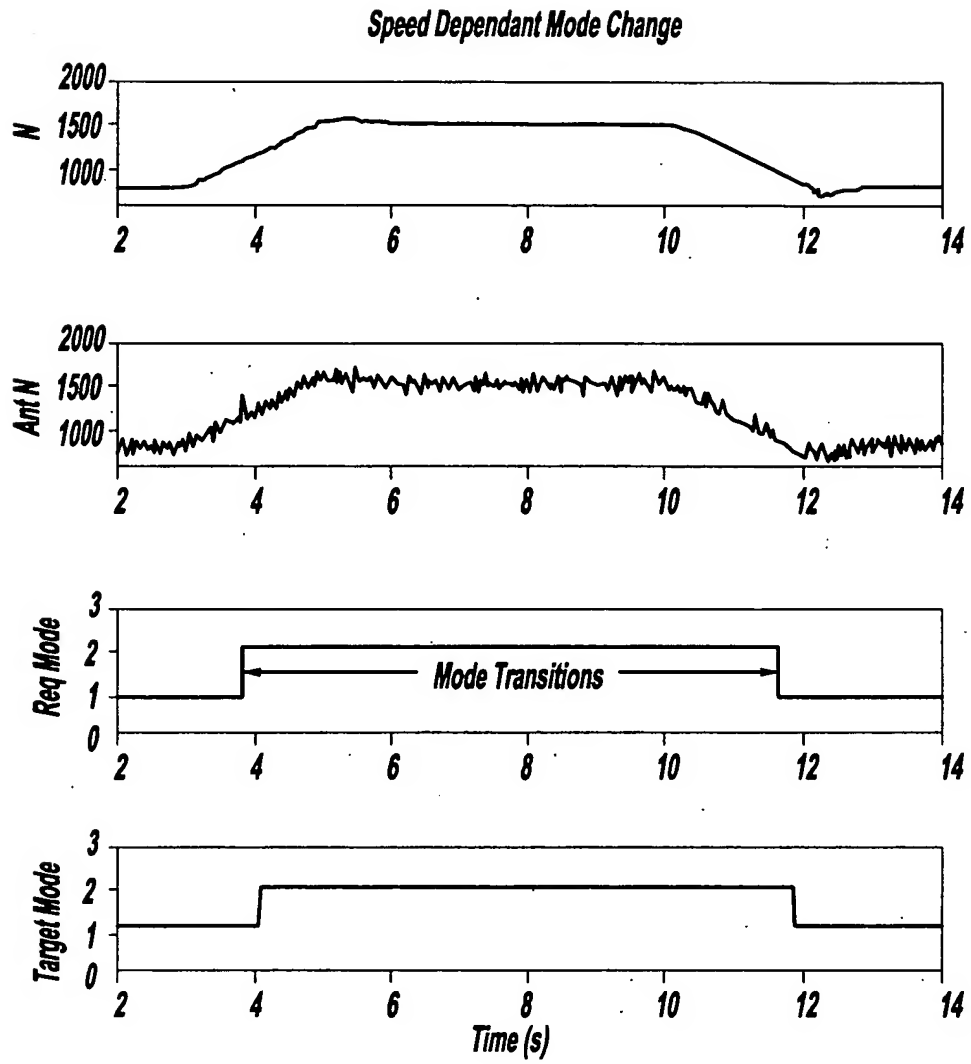
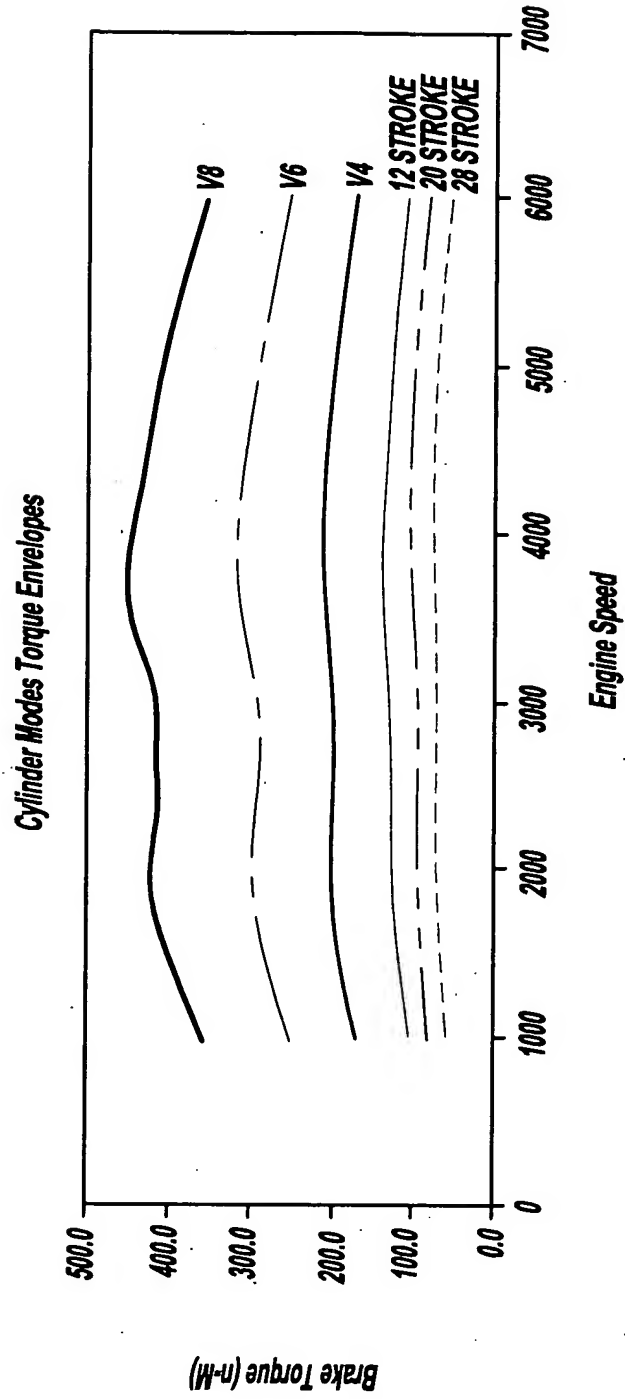


FIG - 28

**FIG - 29**

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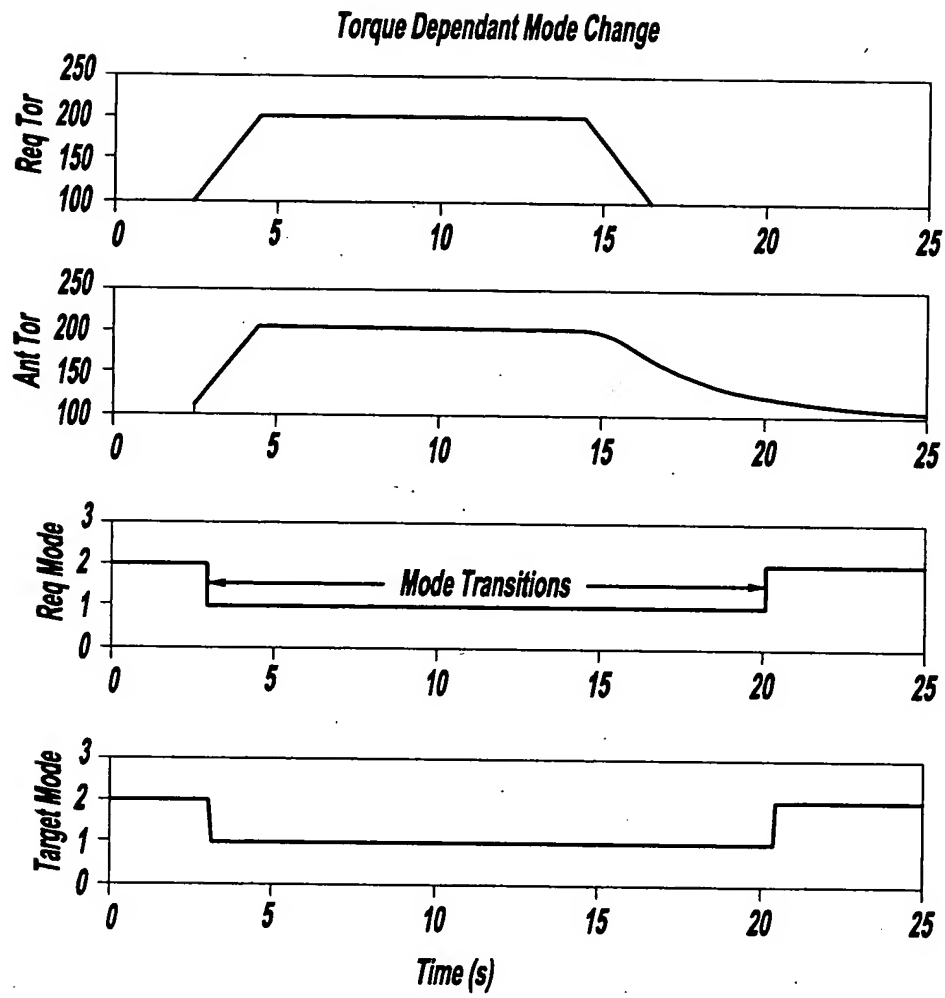
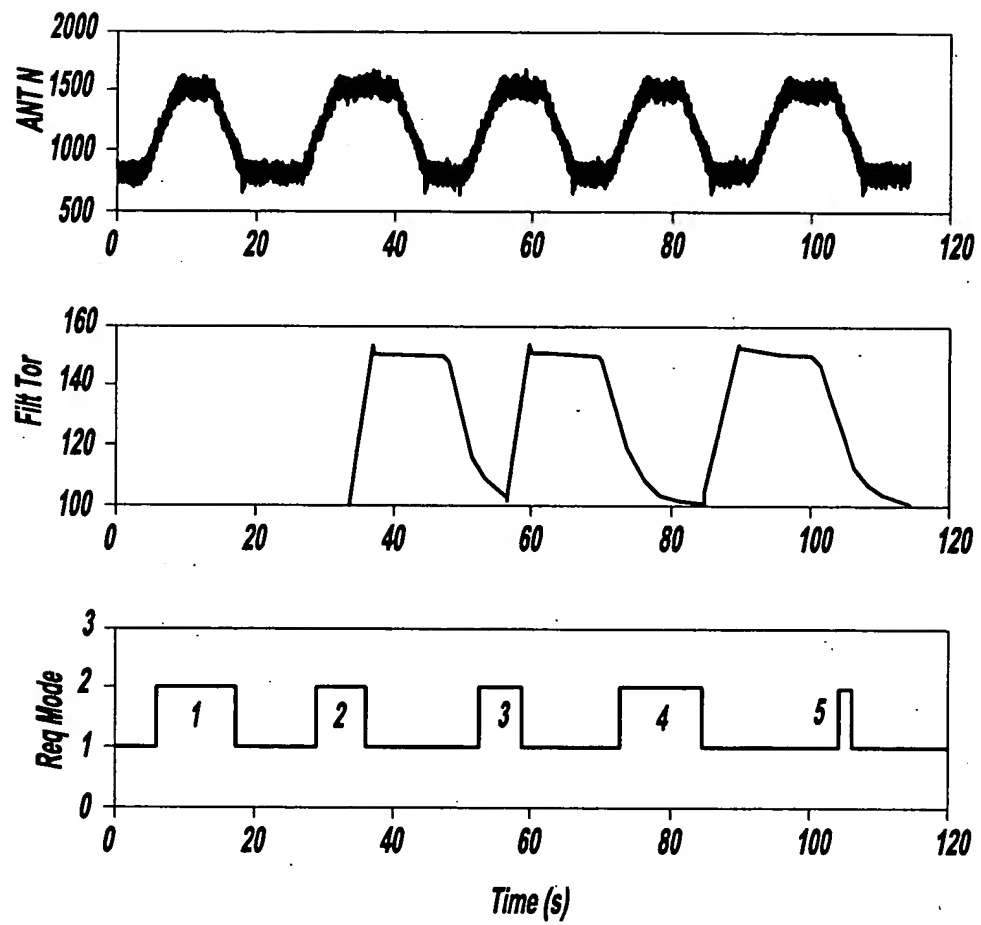
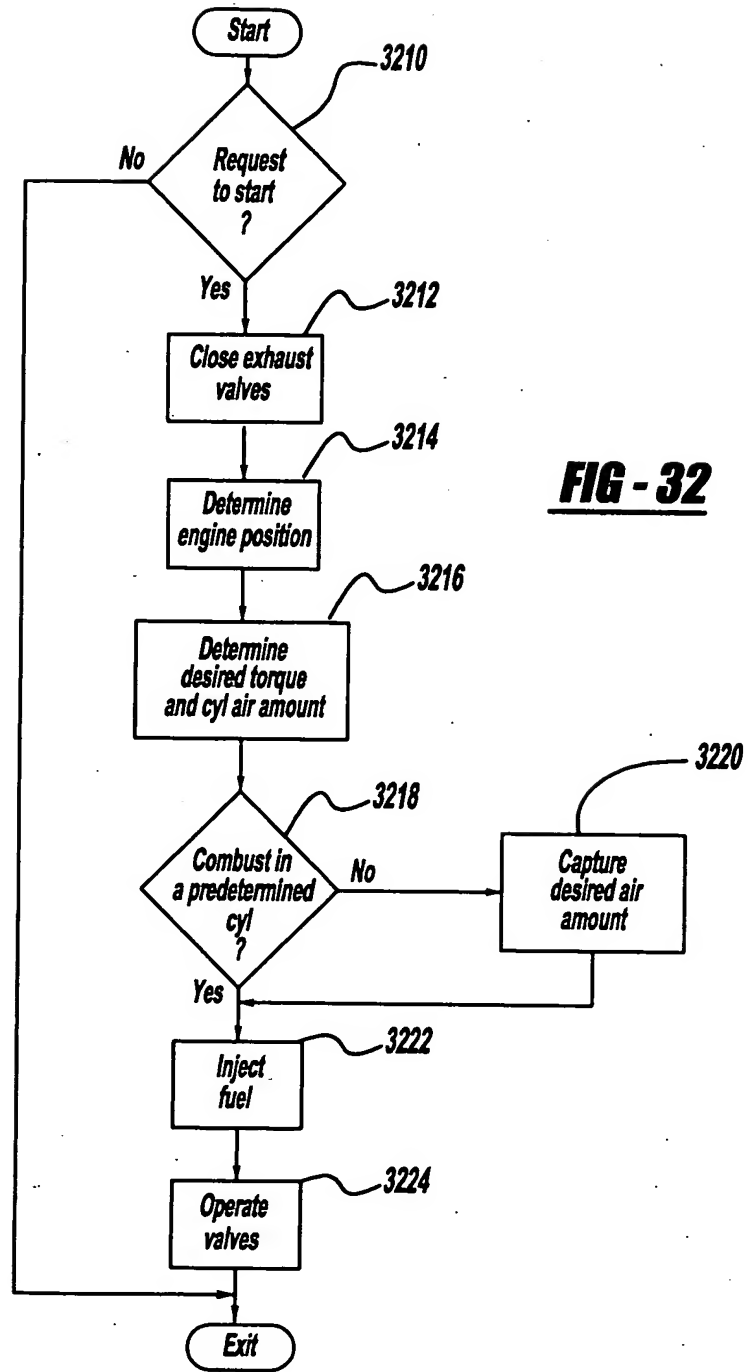


FIG - 30

Speed and Torque Dependant Mode Changes**FIG - 31**



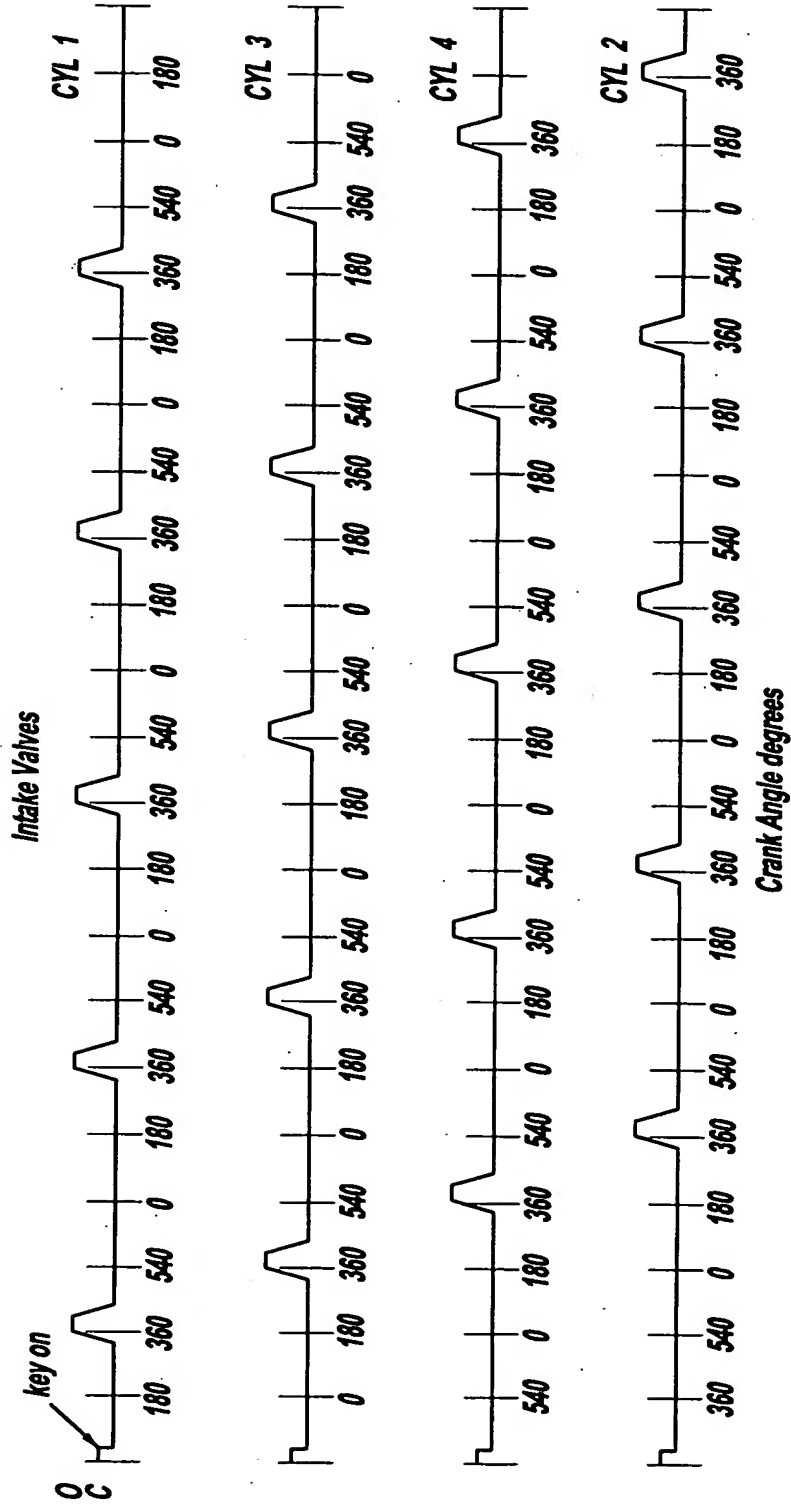
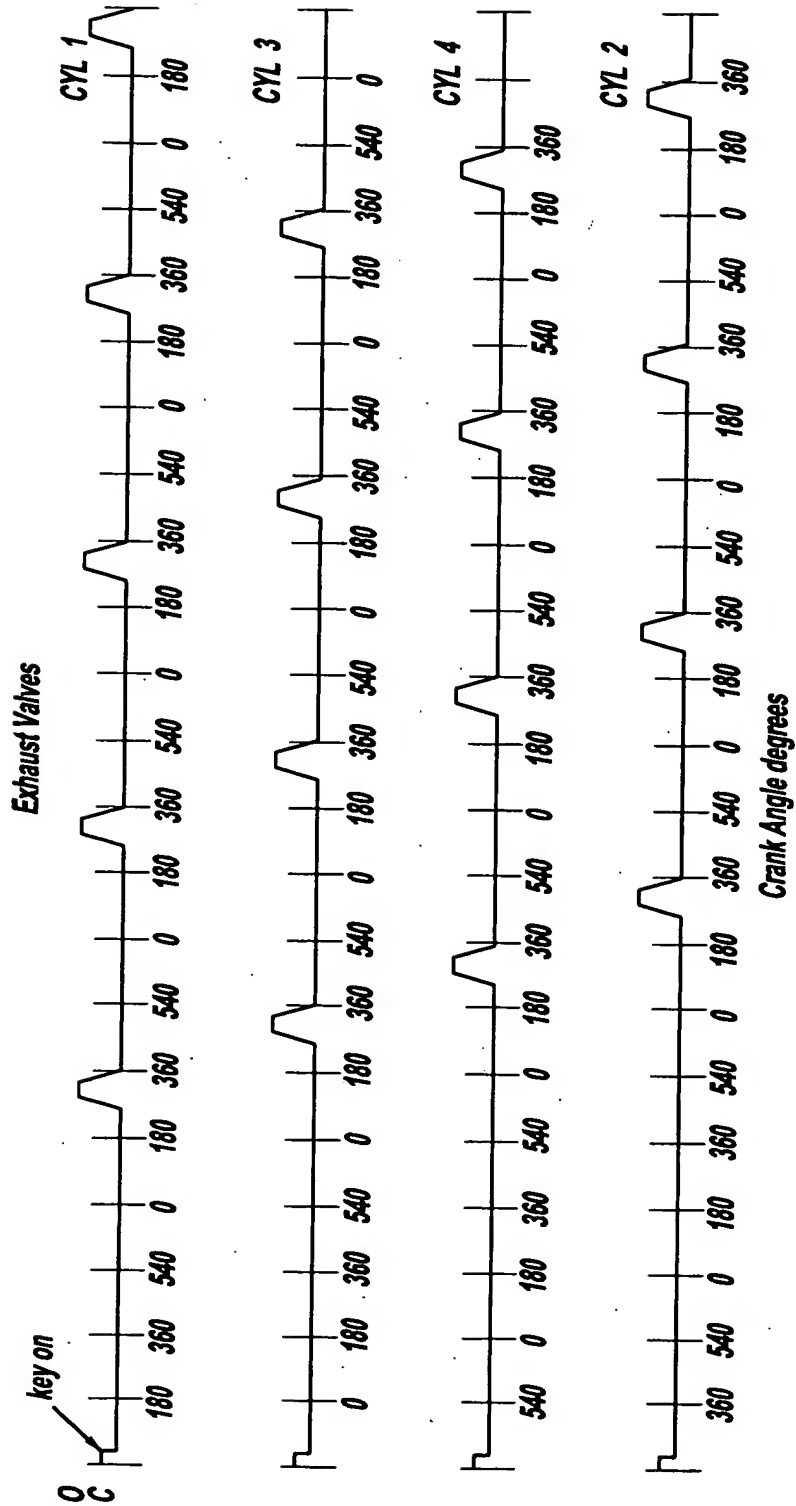


FIG - 33a

**FIG - 33b**

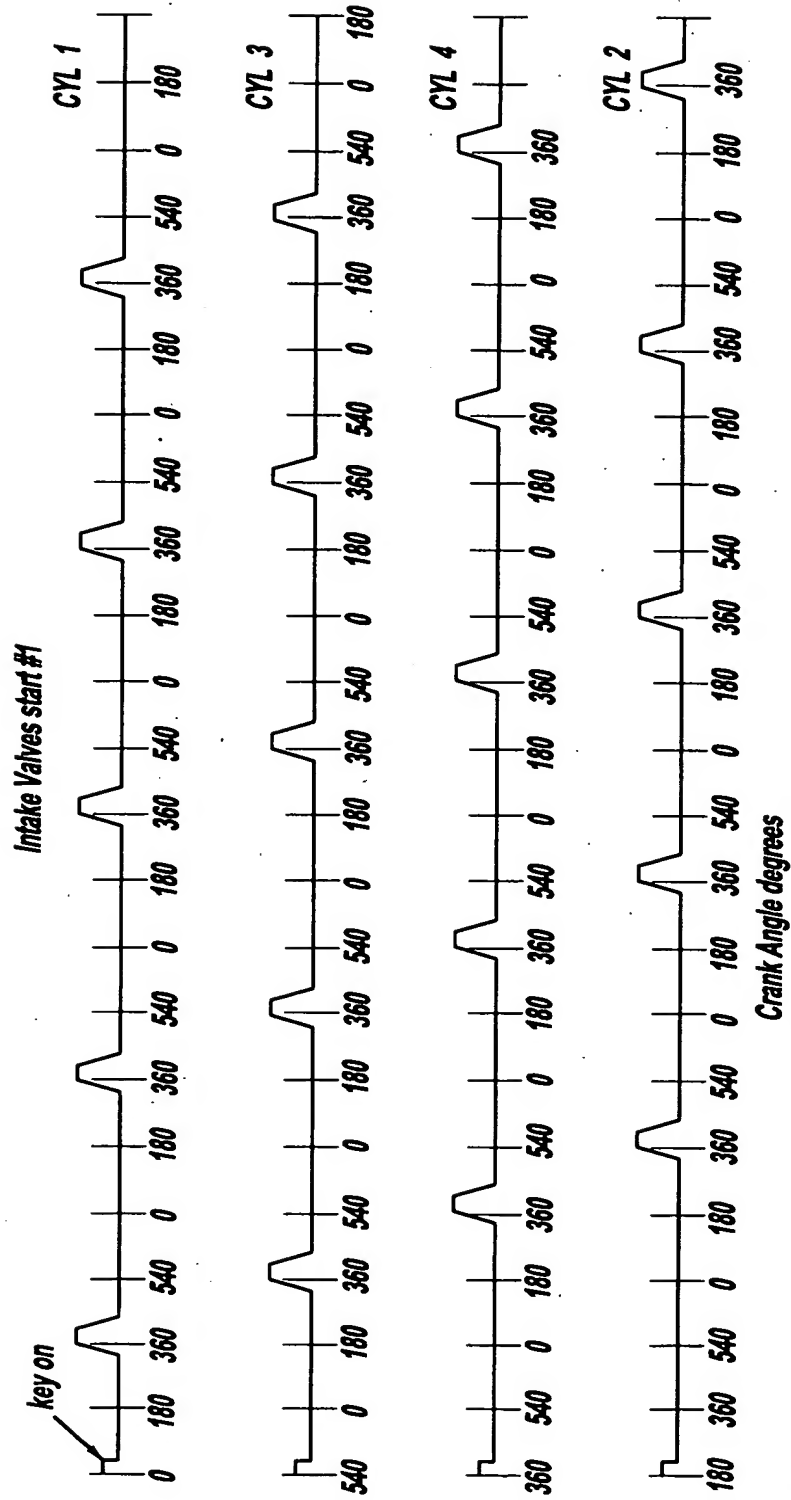
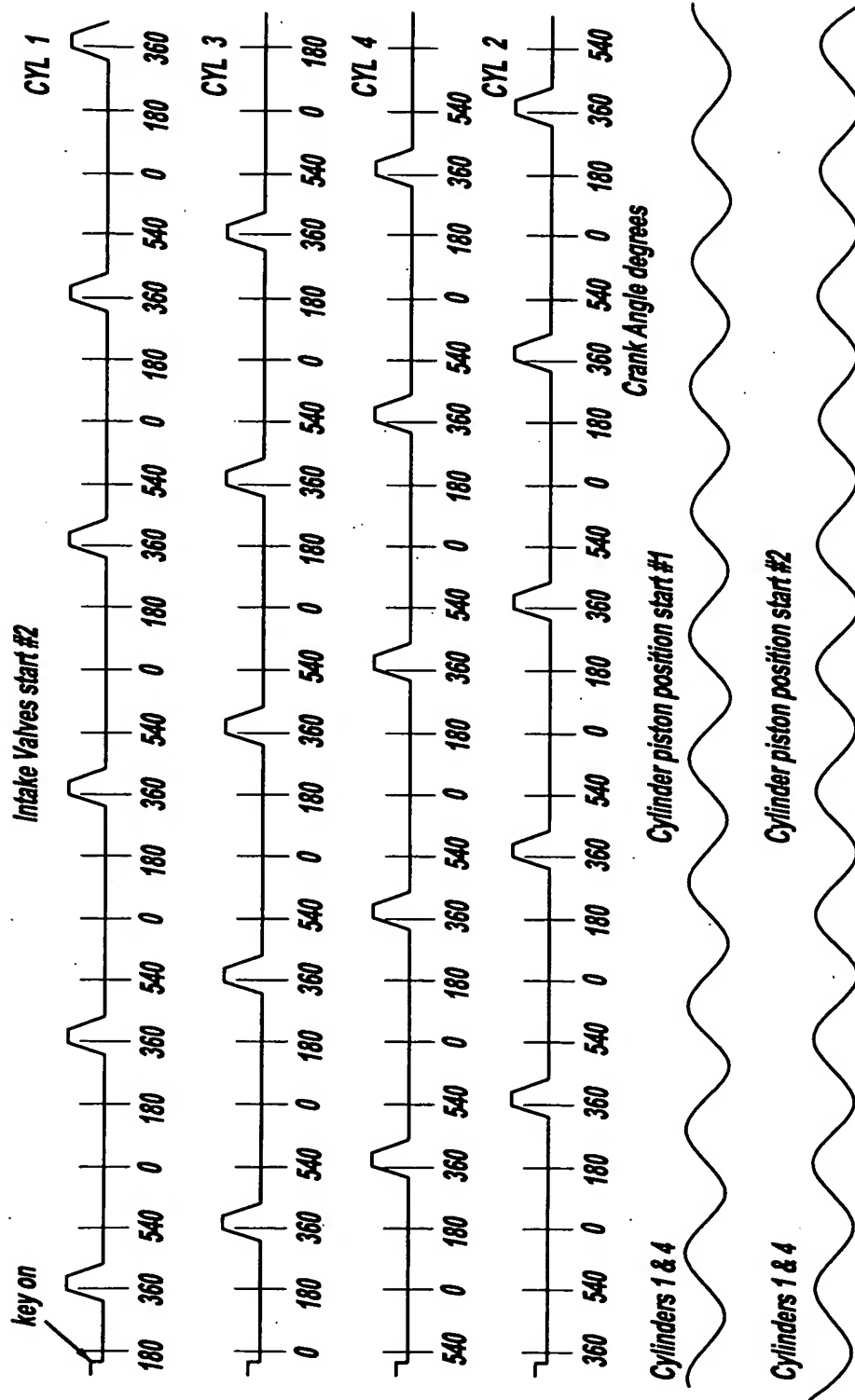


FIG - 34a

**FIG - 34b**

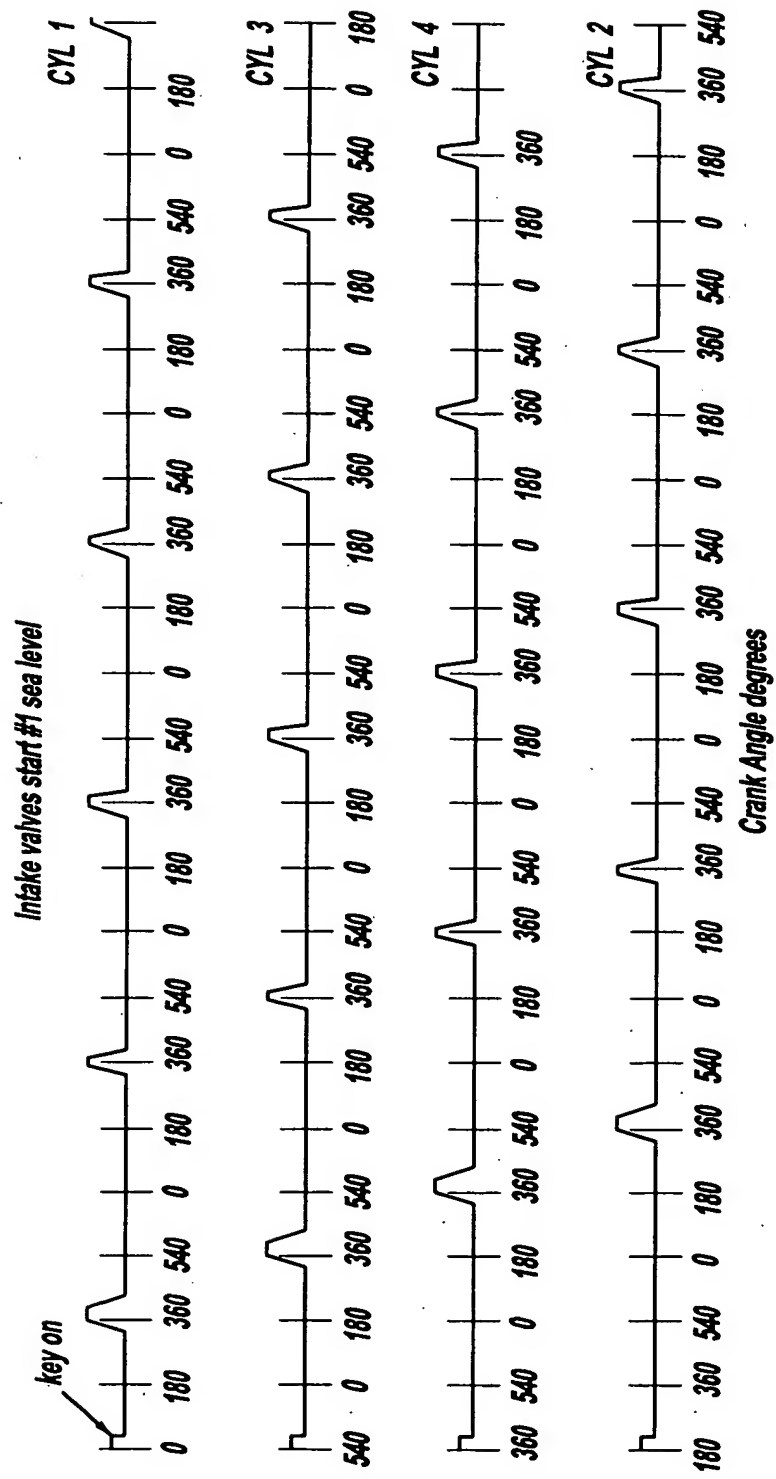
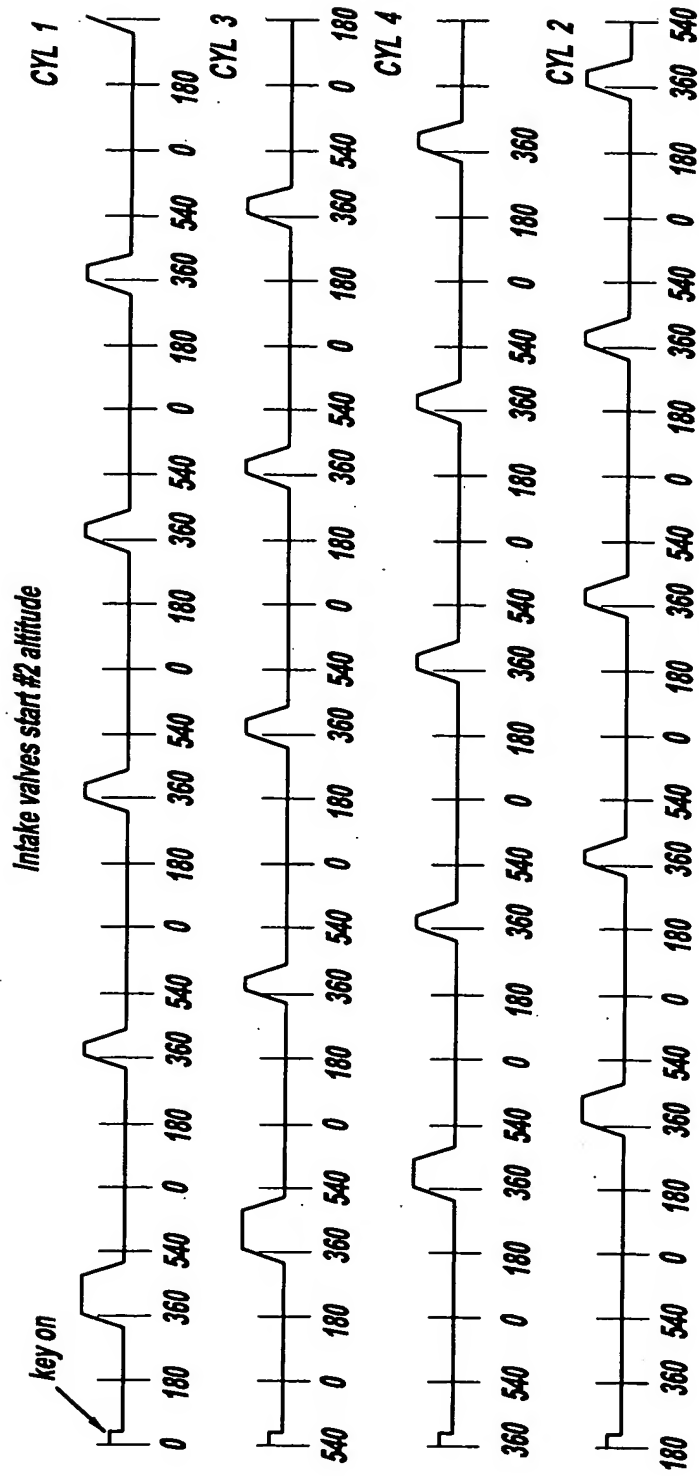
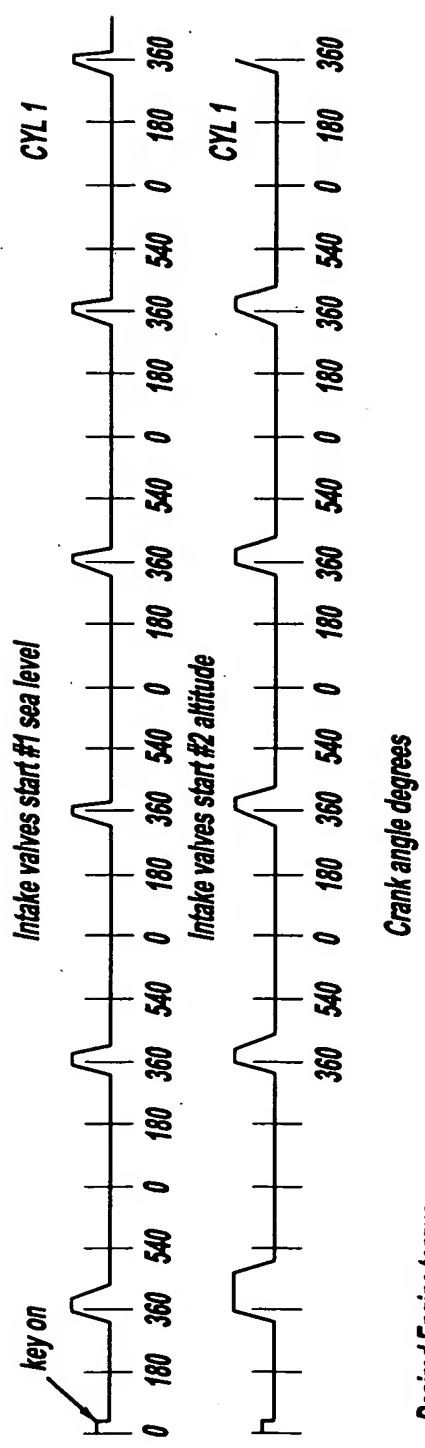


FIG - 35a

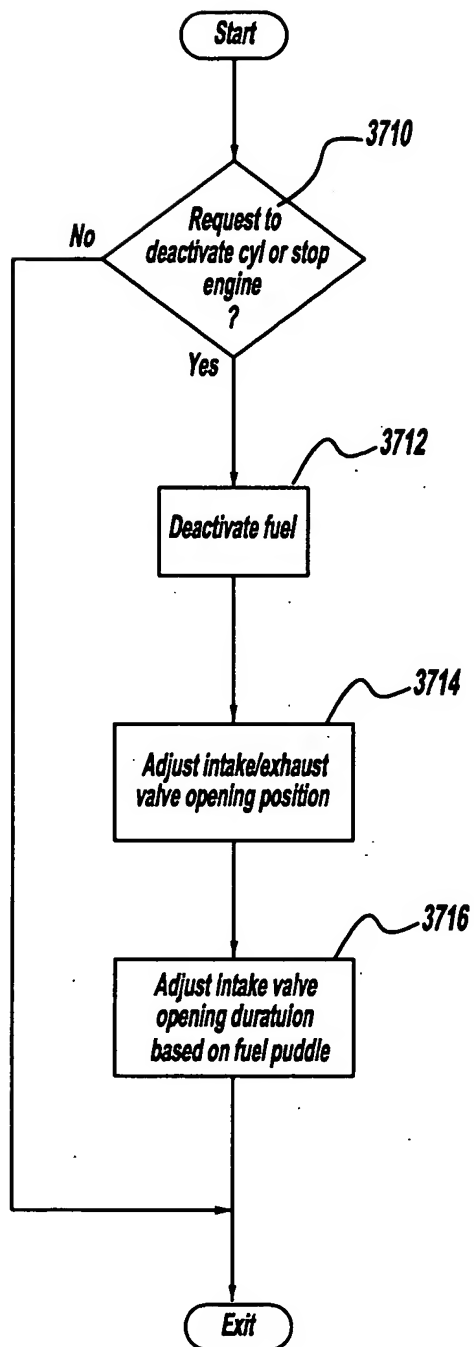
**FIG - 35b**



Desired Engine torque

Engine Speed

FIG - 36

**FIG - 37**

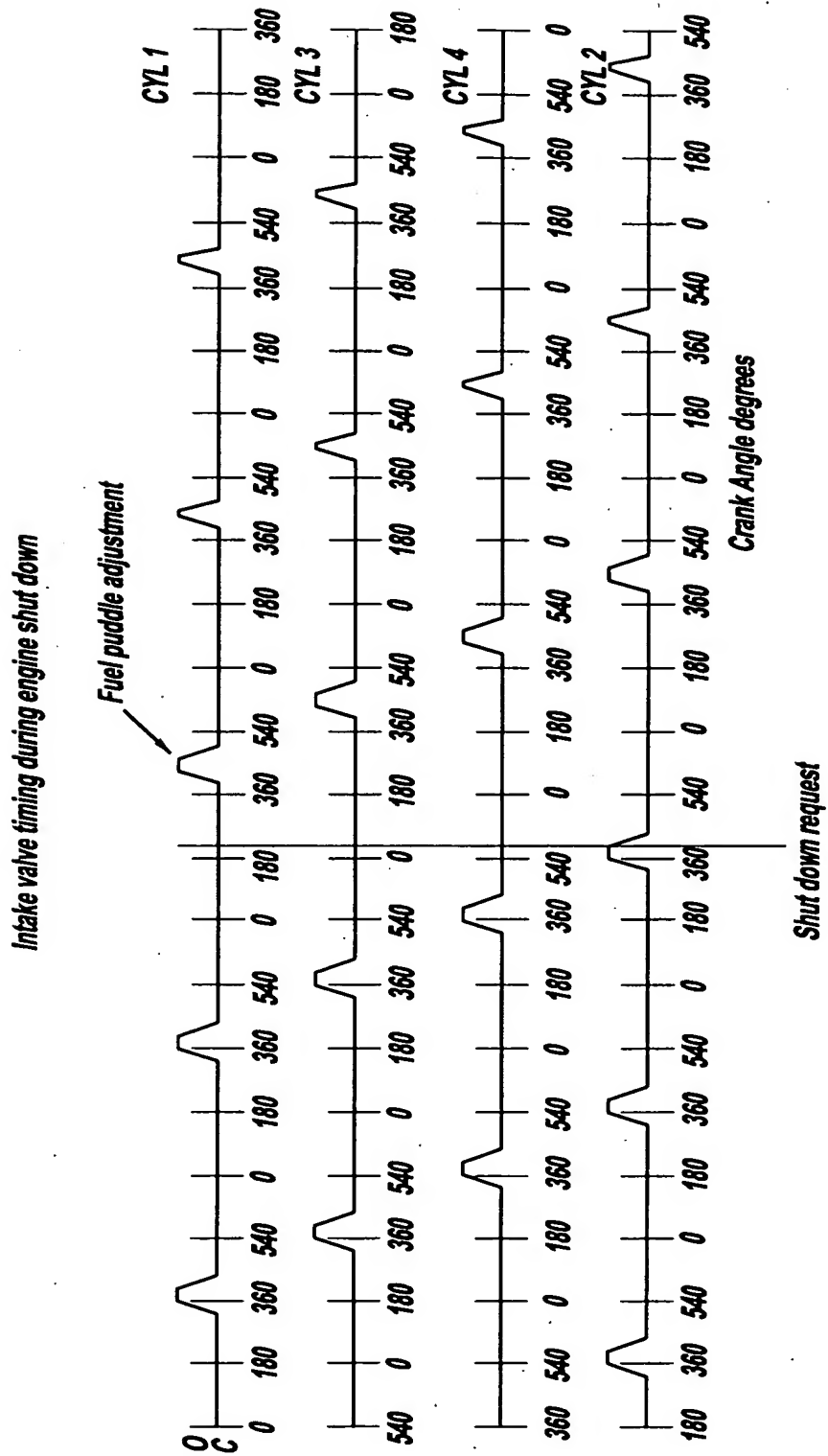
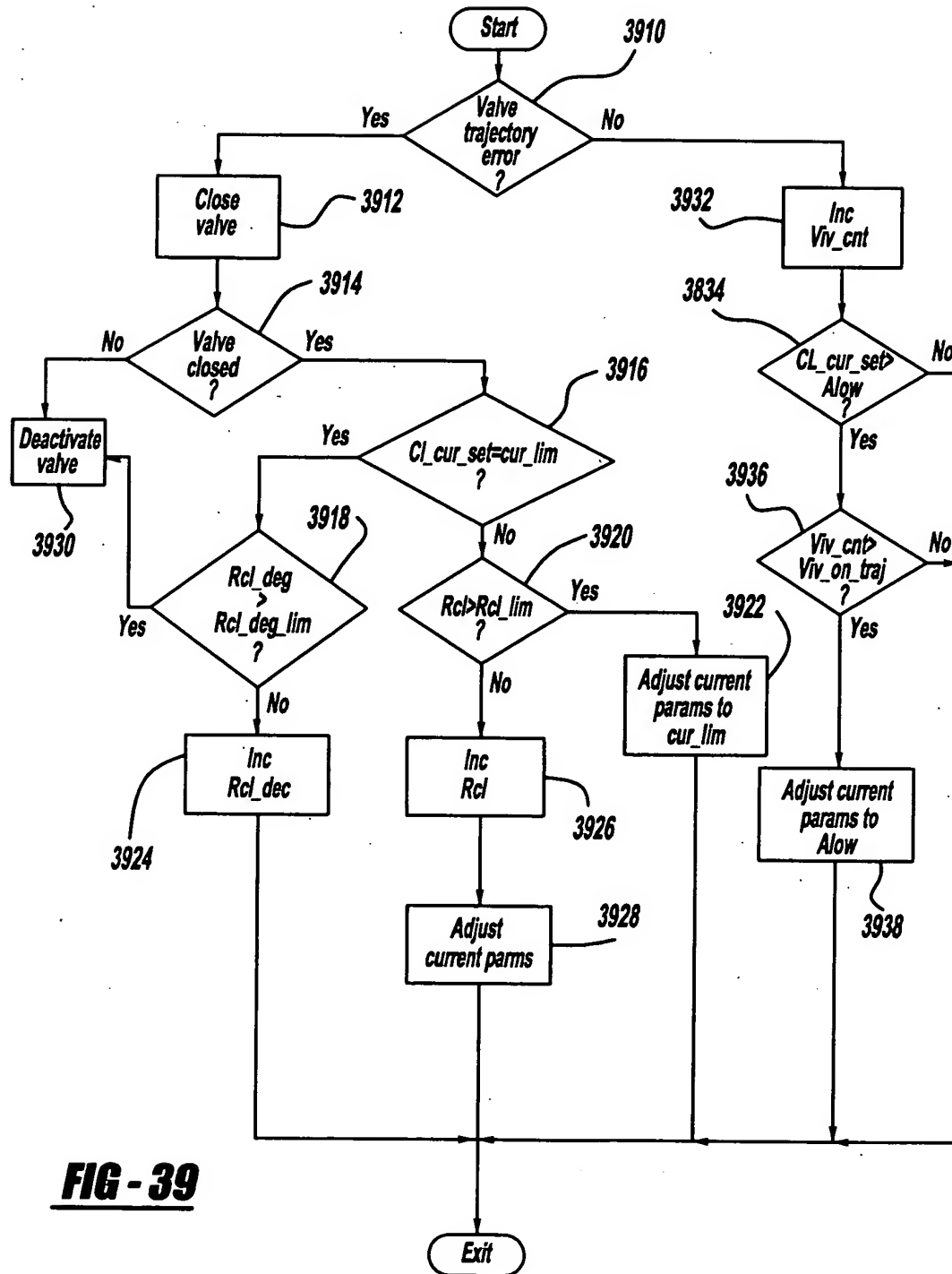


FIG - 38

**FIG - 39**

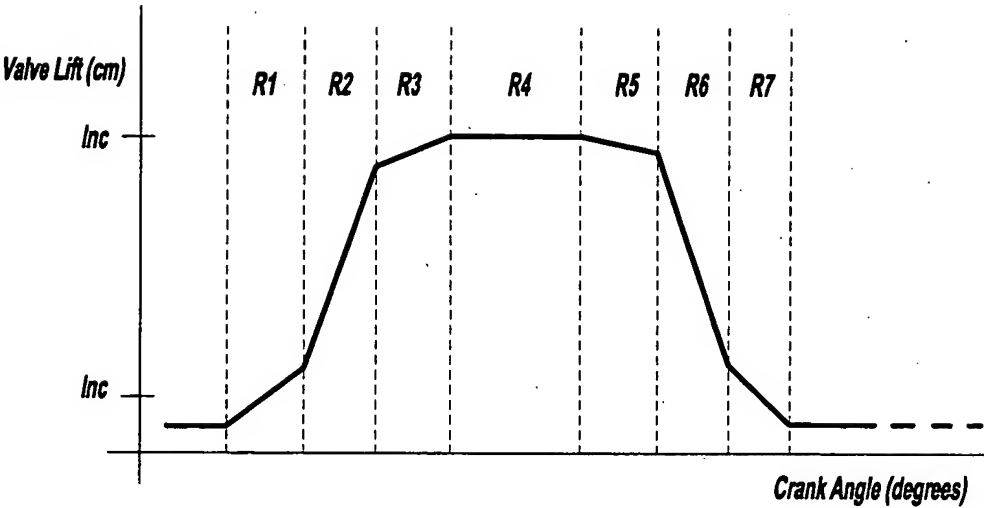


FIG - 40

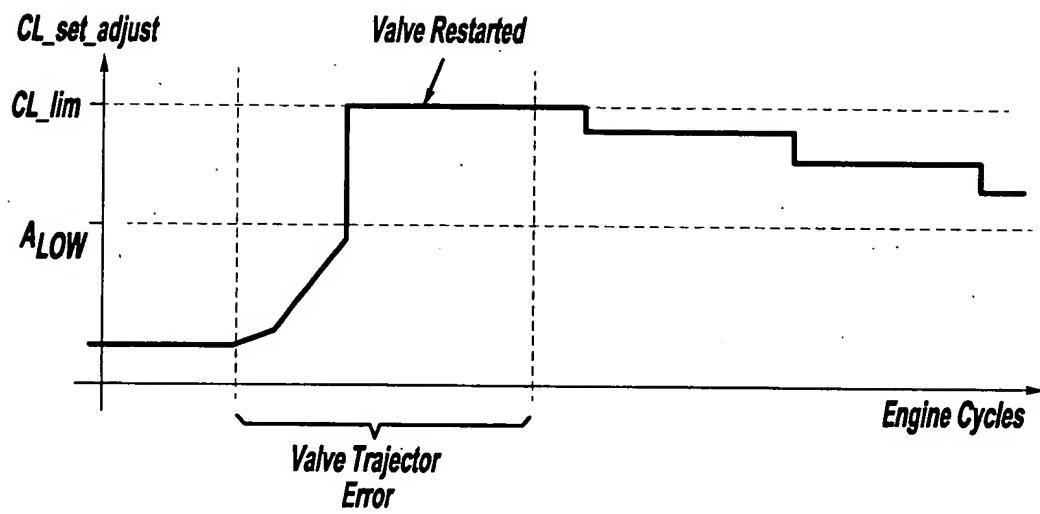
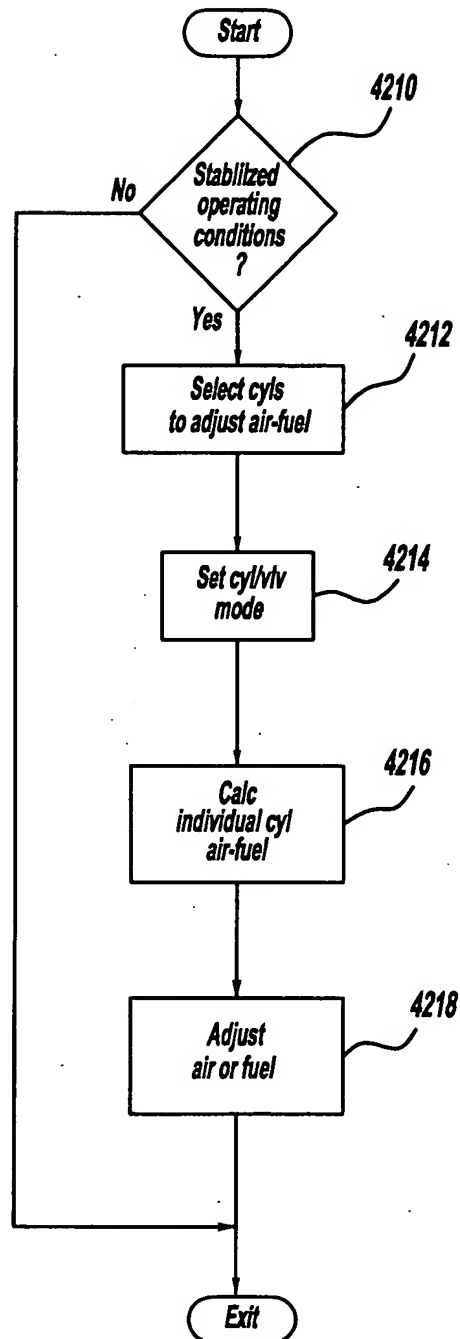


FIG - 41

**FIG - 42**

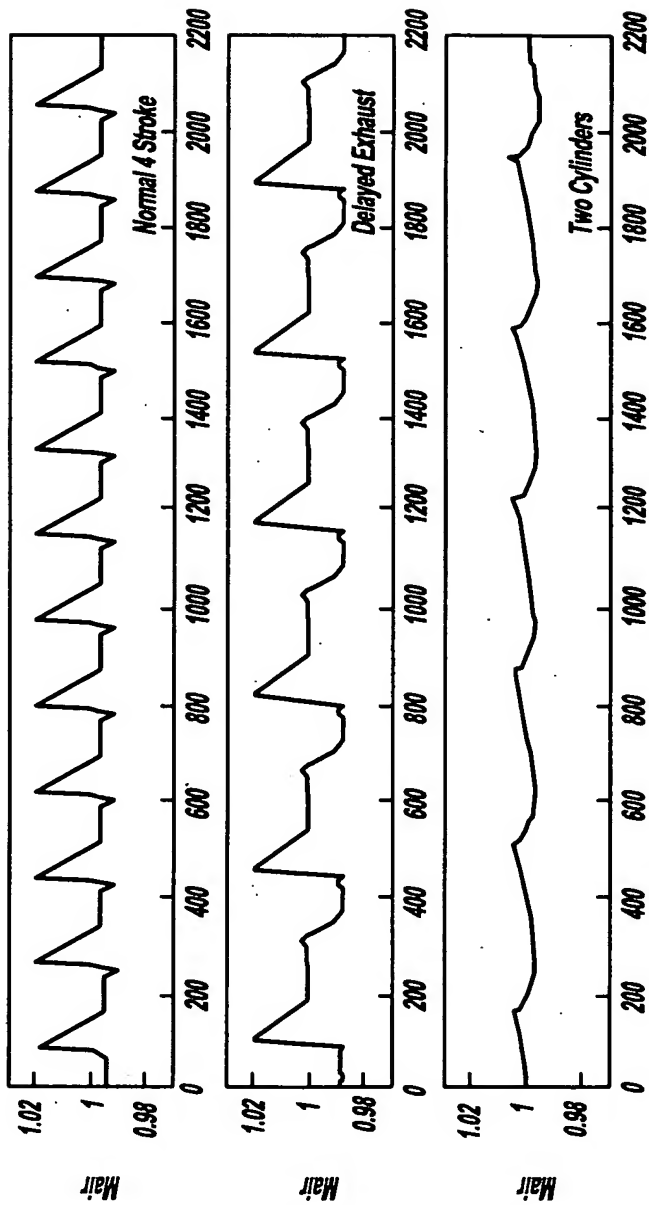
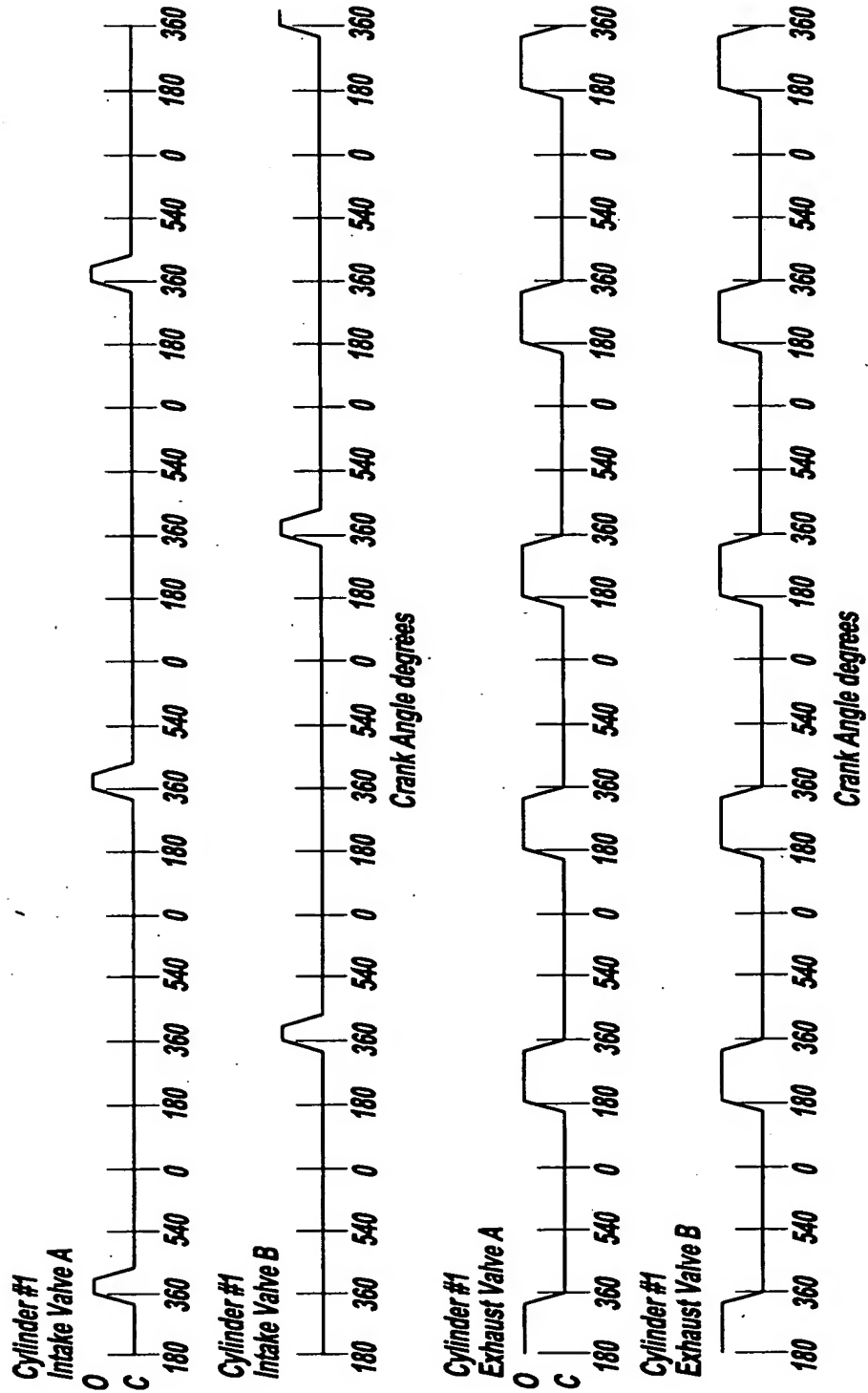


FIG - 43

**FIG - 44**

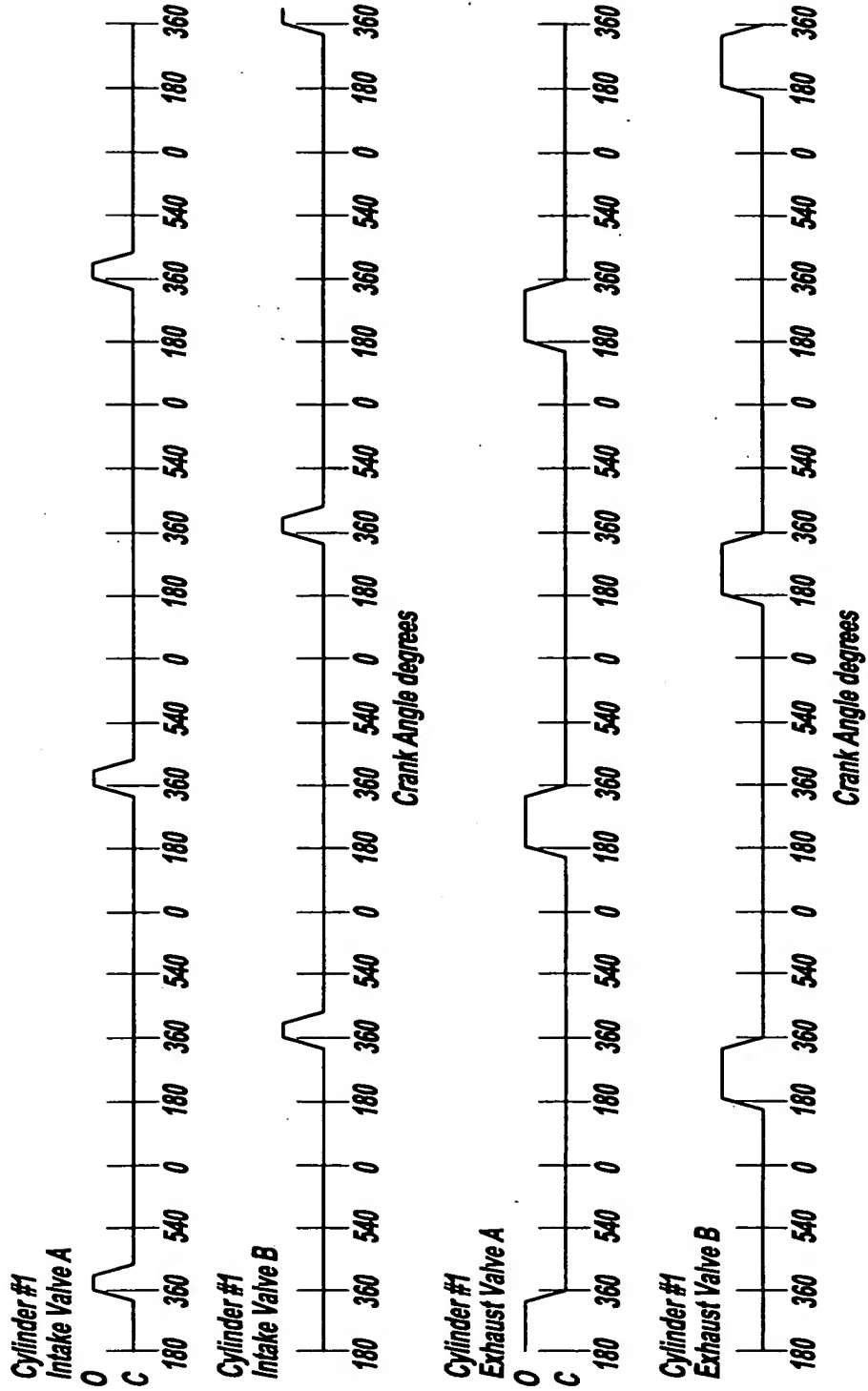
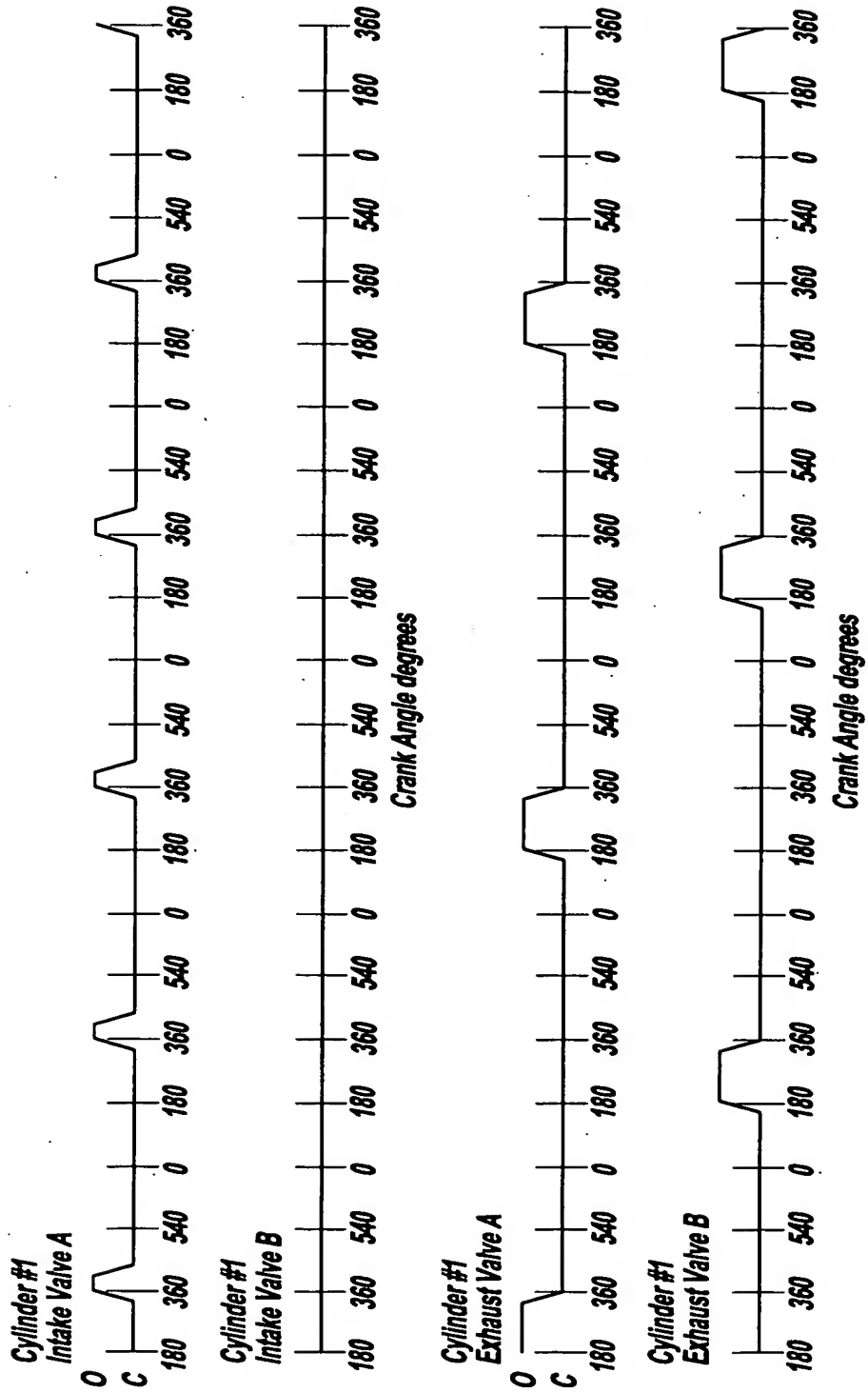
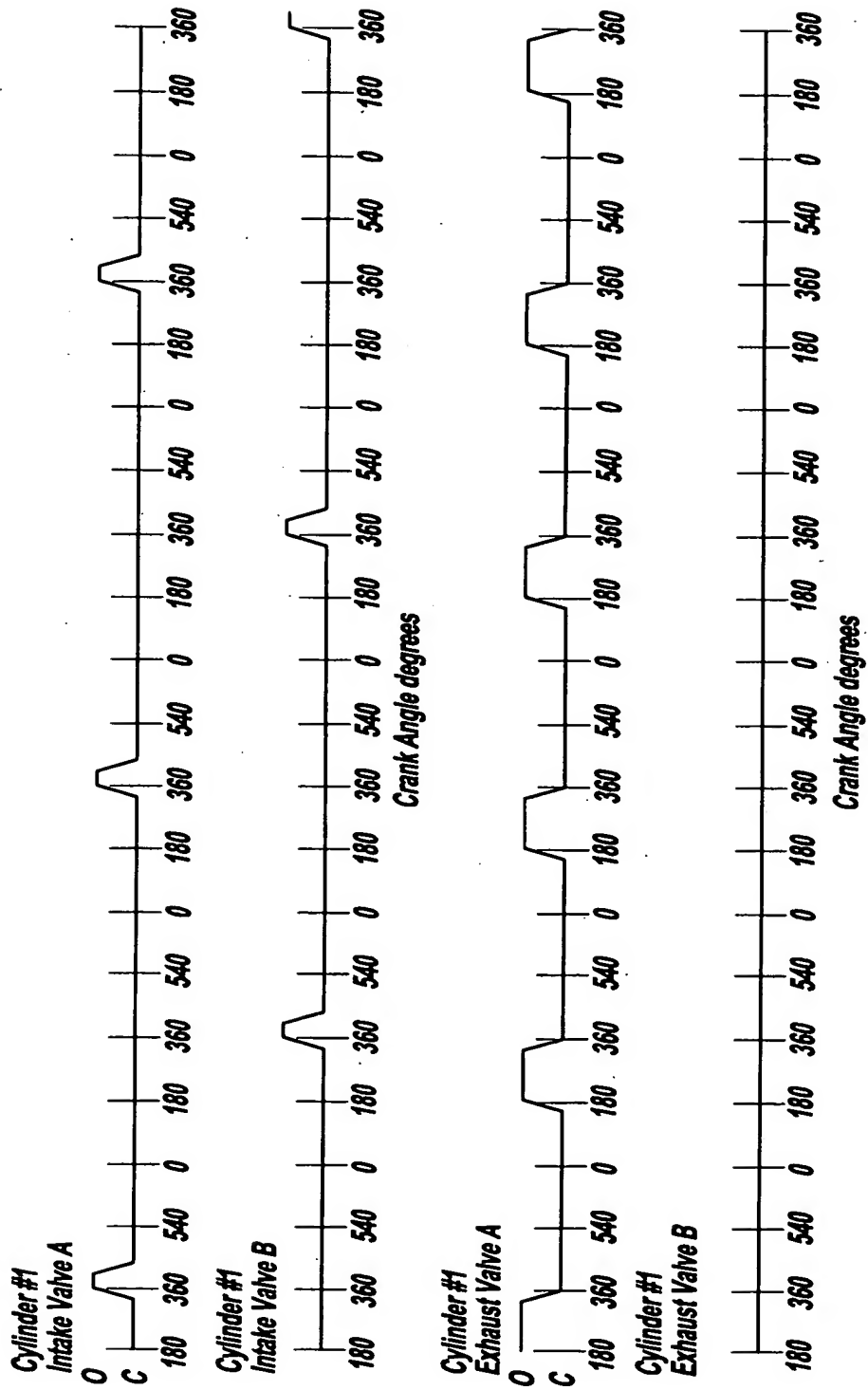


FIG - 45

**FIG - 46**

**FIG - 47**

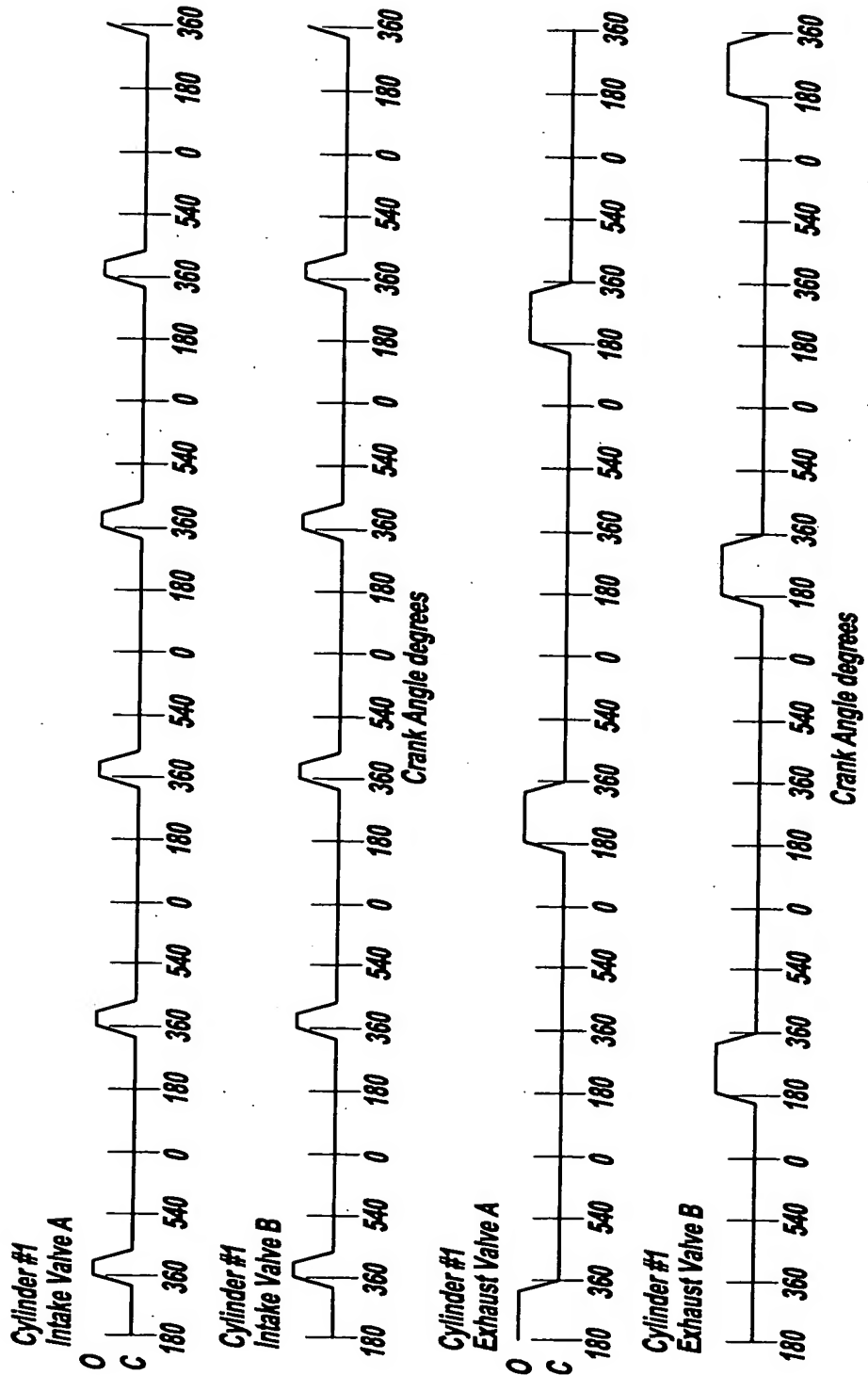
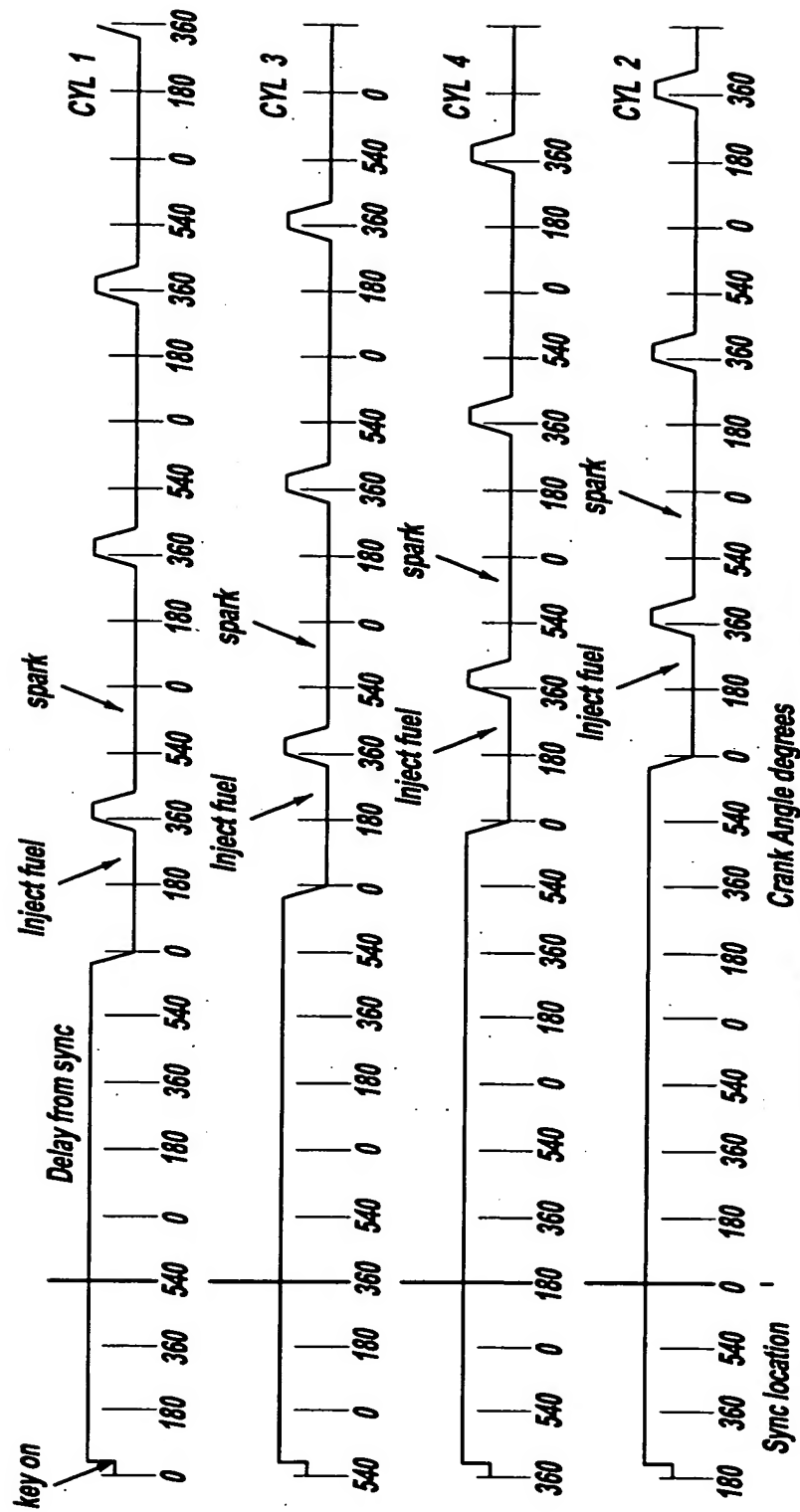
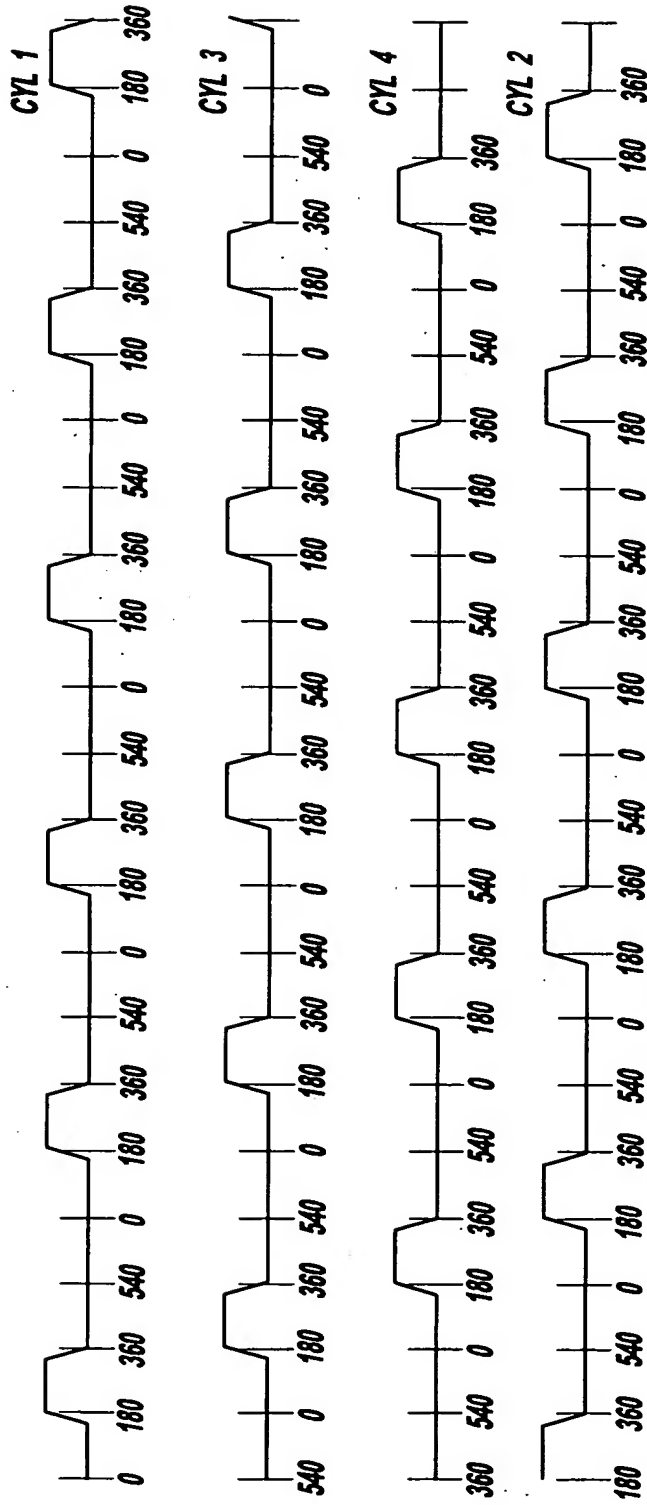


FIG - 48



Crank Angle degrees
Intake Valve Timing From Start (electrical valve operation)

FIG - 49a



Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

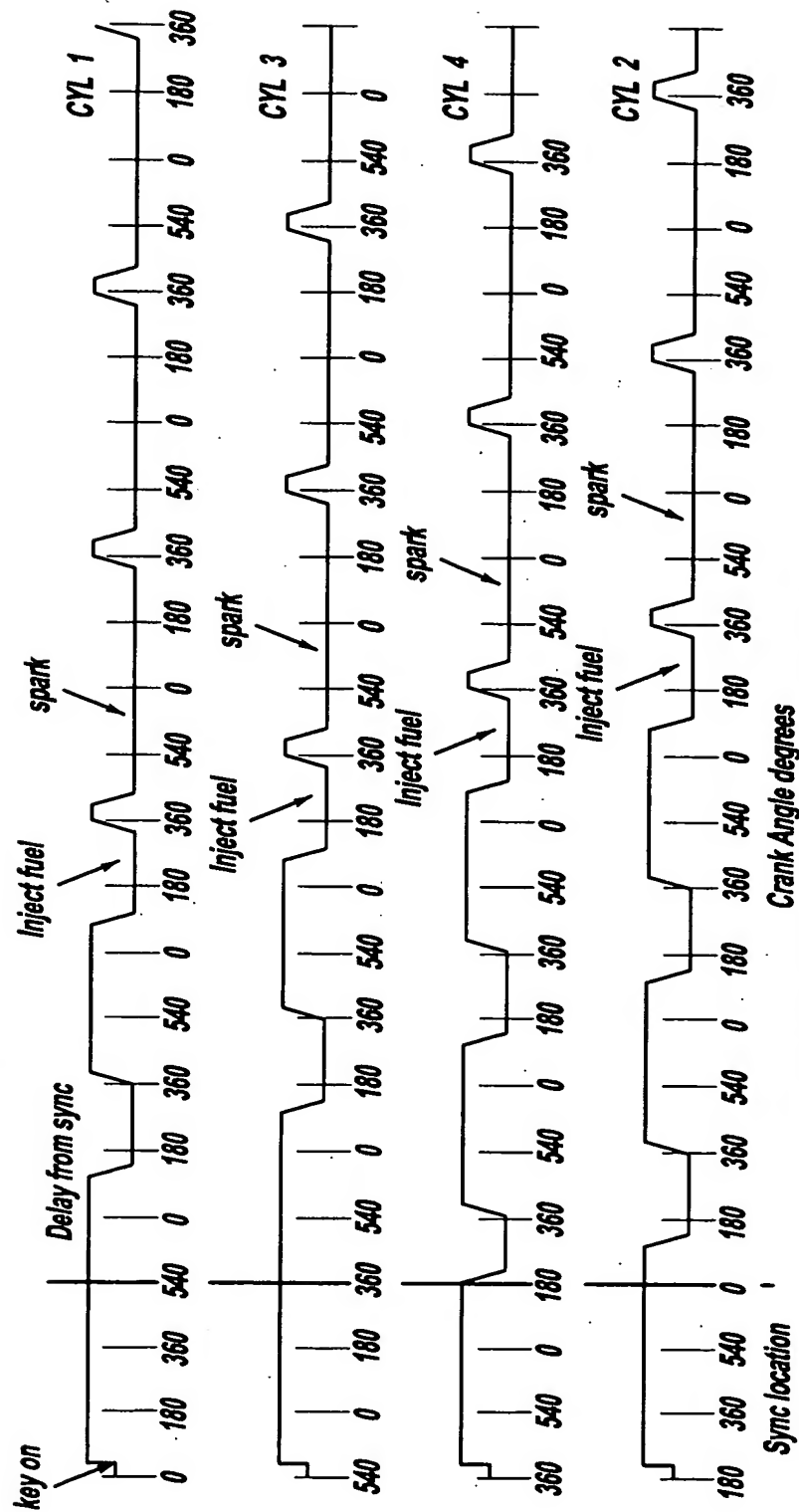
Cylinder piston position cyl 1 & 4



Cylinders 2 & 3

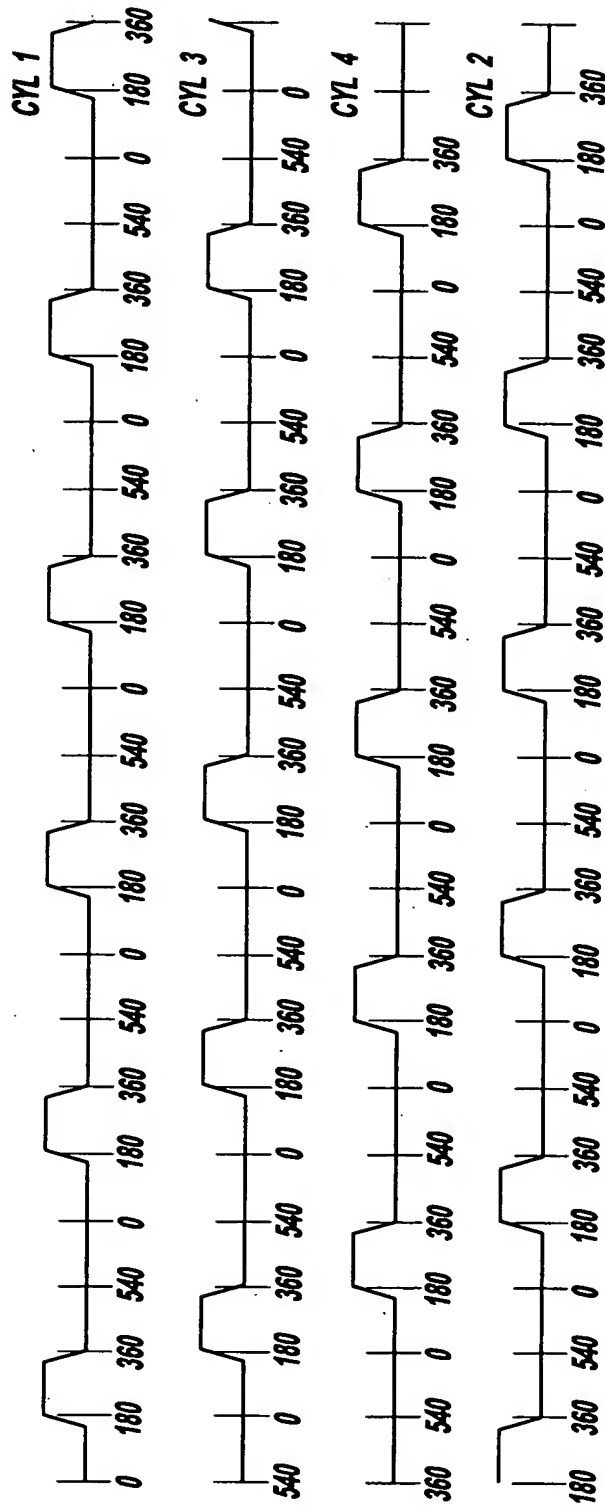


FIG - 49b



Intake Valve Timing From Start (electrical valve operation)

FIG - 50a



Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

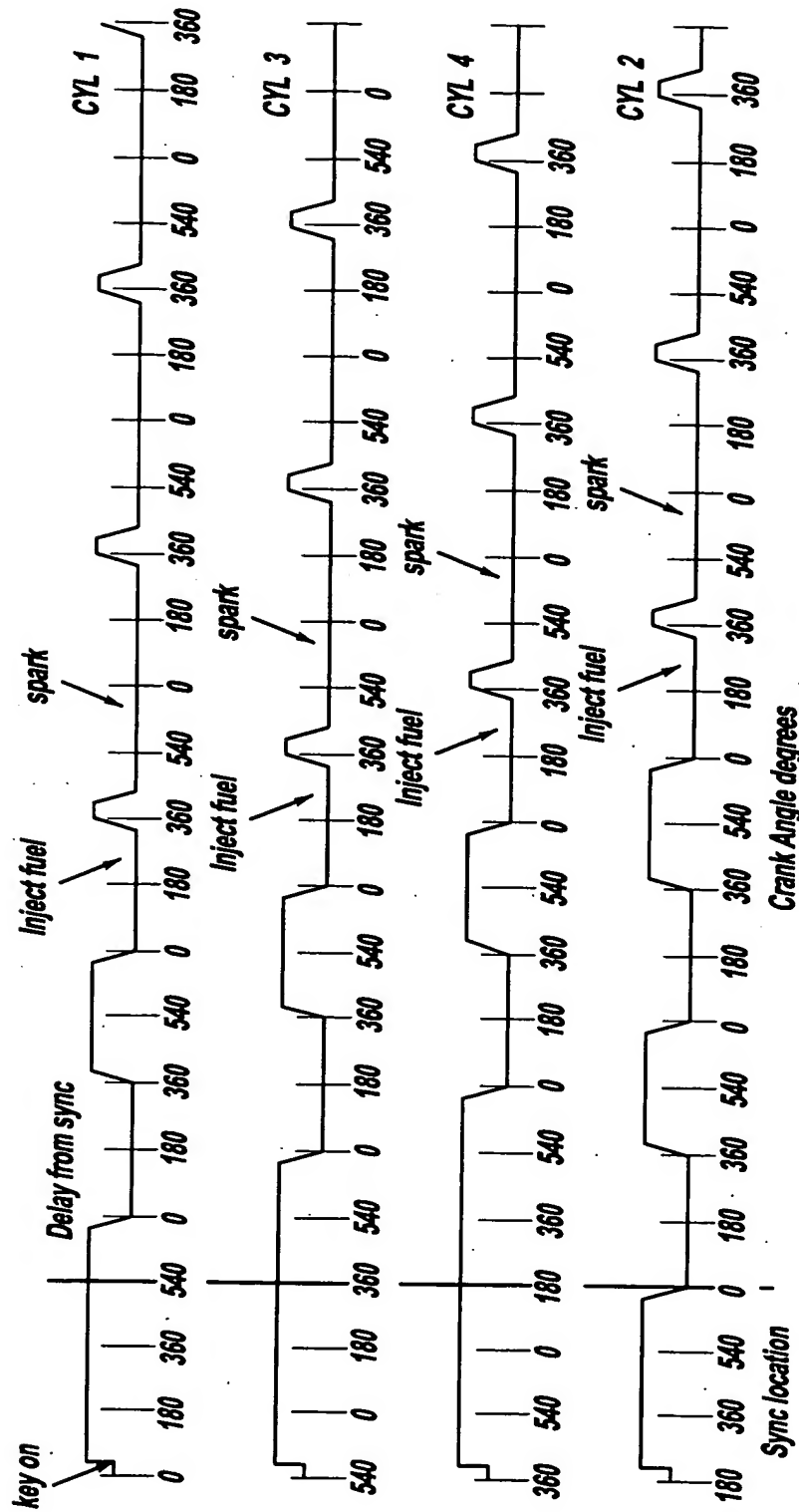
Cylinder piston position cyl 1 & 4

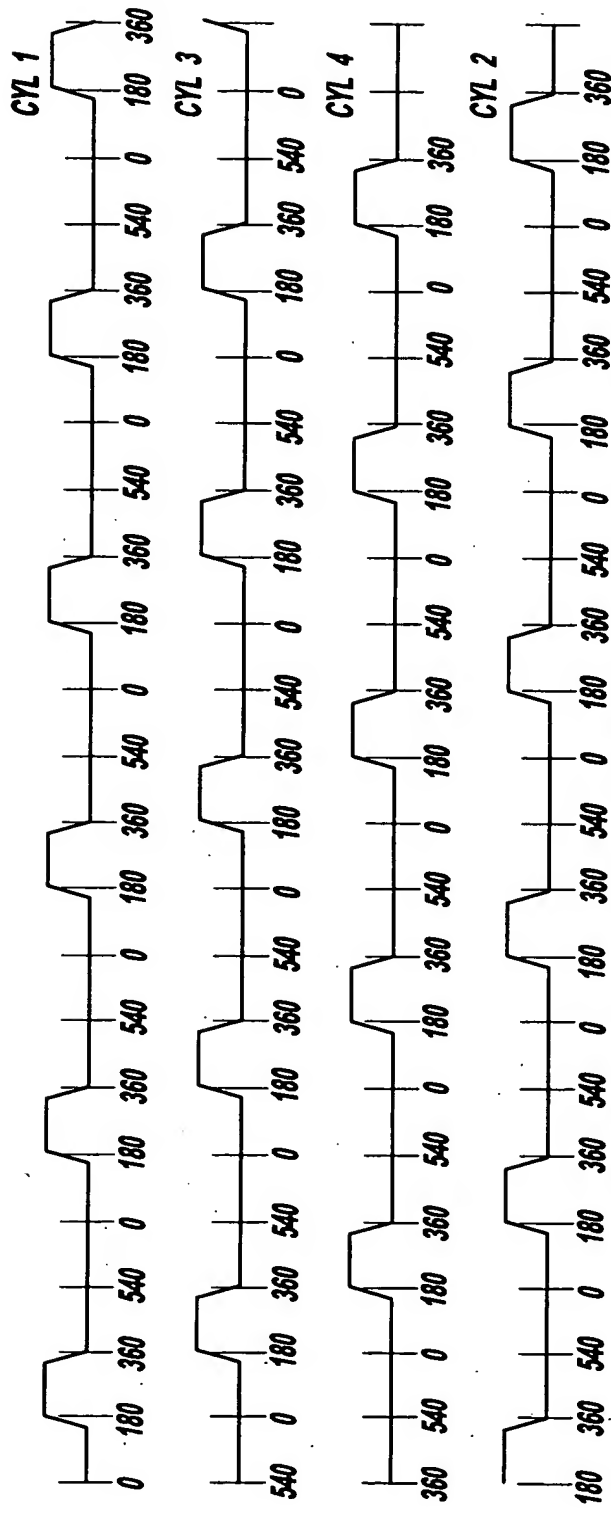


Cylinders 2 & 3



FIG - 50b





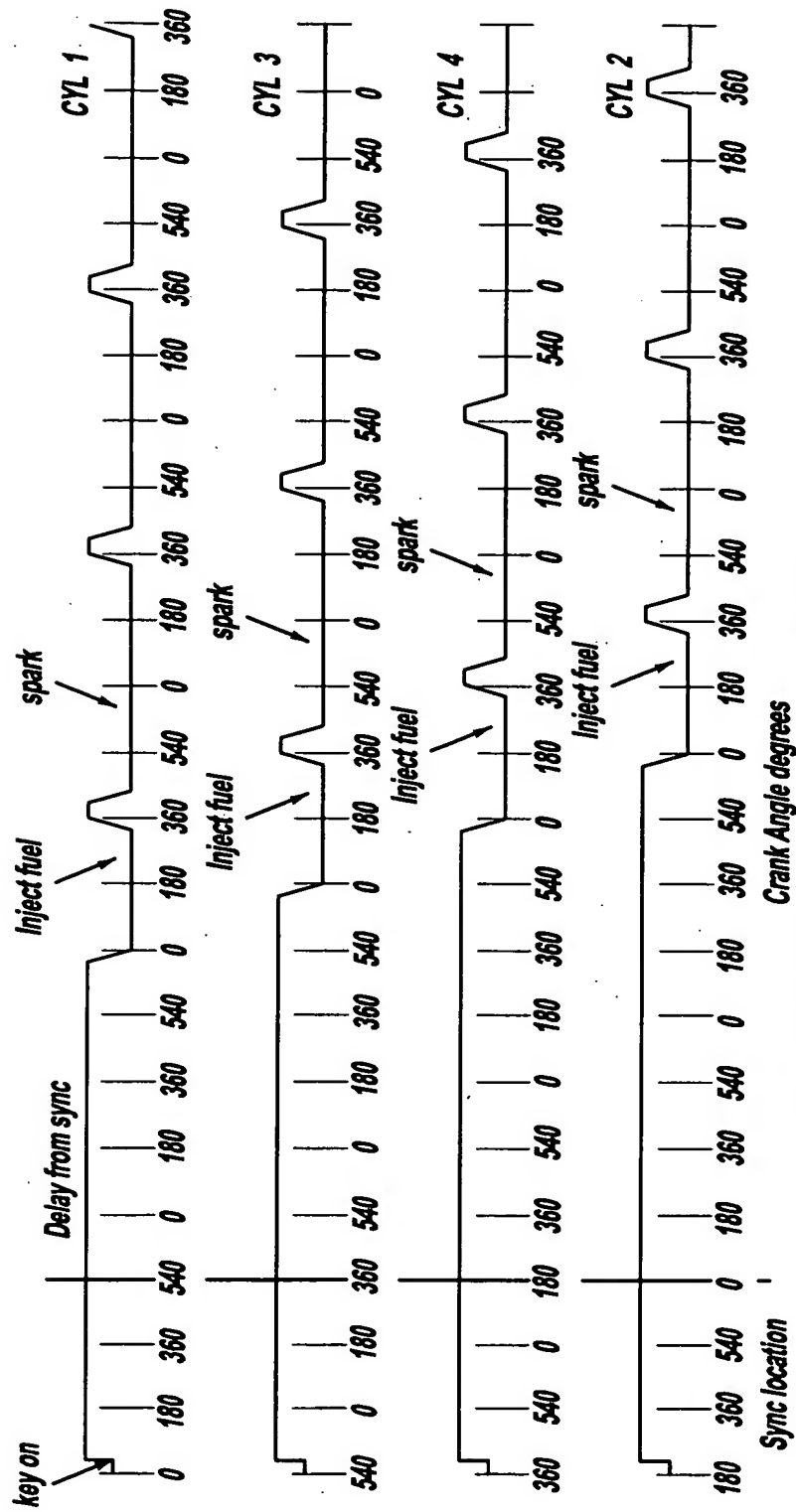
Crank Angle degrees

Exhaust Valve Timing From Start (mechanical valve operation)

Cylinder piston position cyl 1 & 4

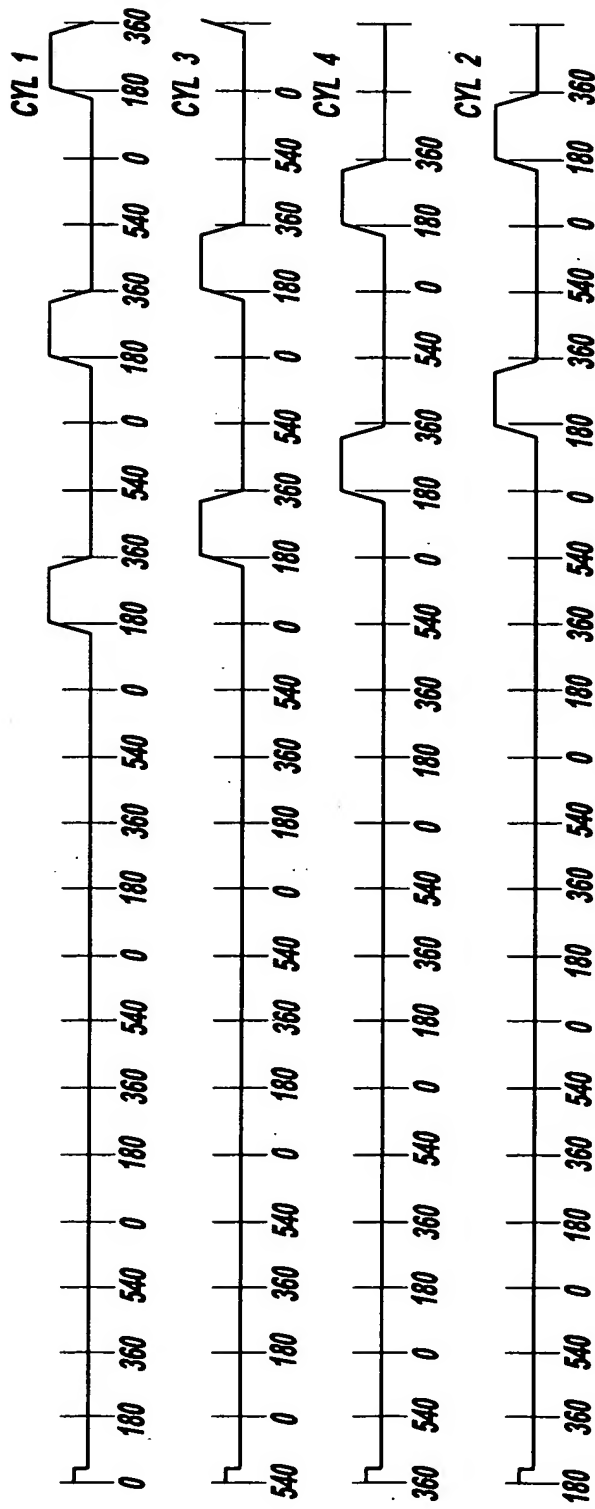
Cylinders 2 & 3

FIG - 51b



Intake Valve Timing From Start (electrical valve operation)

FIG - 52a



Crank Angle degrees
Exhaust Valve Timing From Start (electrical valve operation)

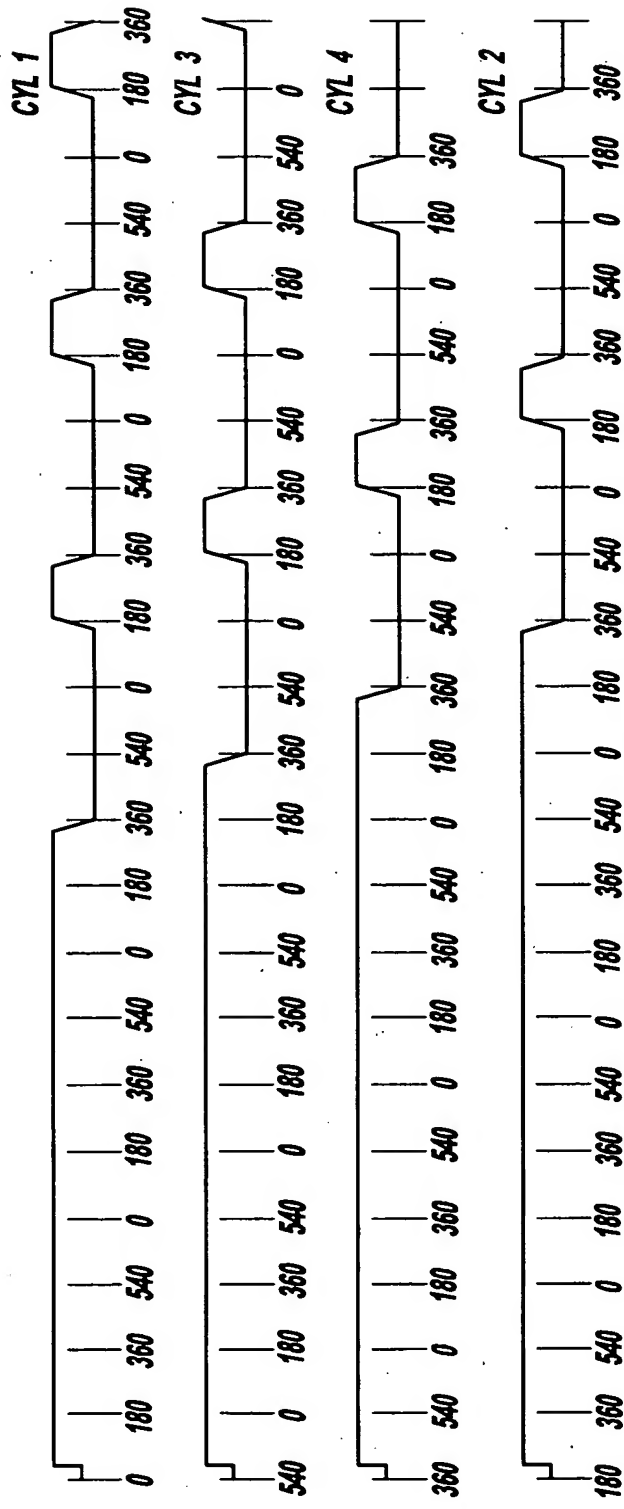
Cylinder piston position cyl 1 & 4



Cylinders 2 & 3



FIG - 52b

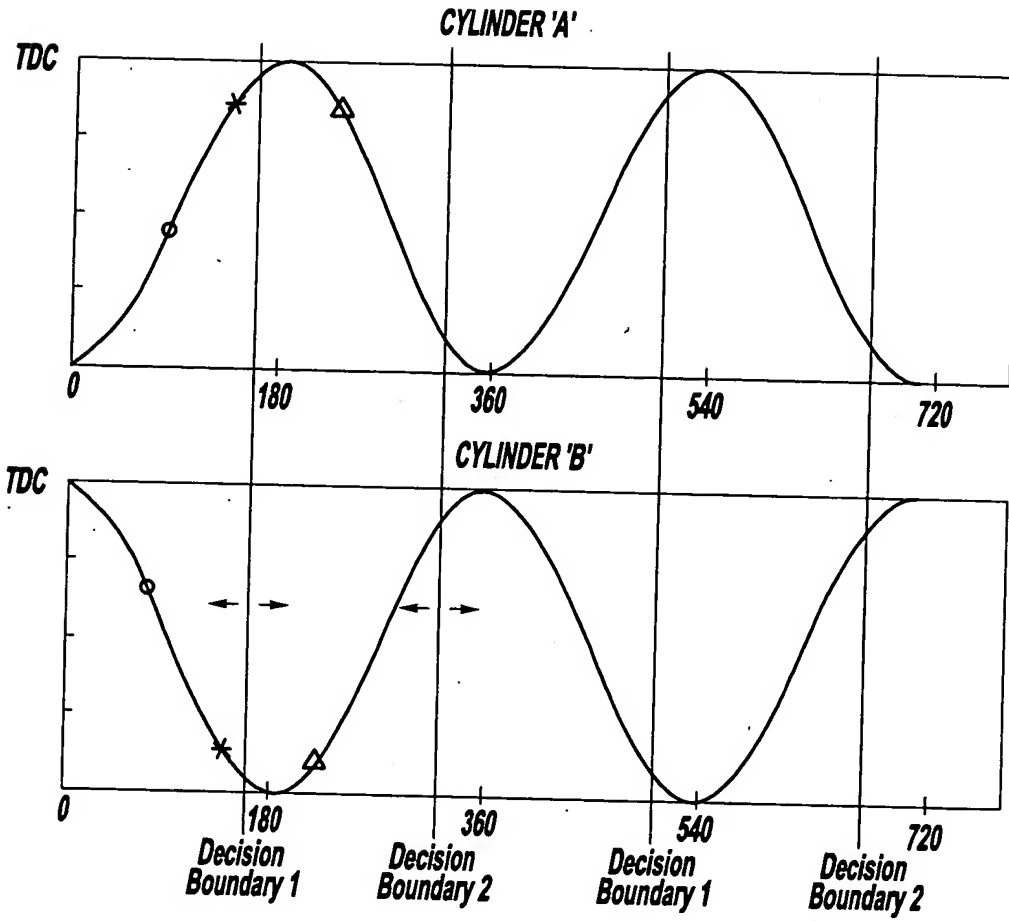


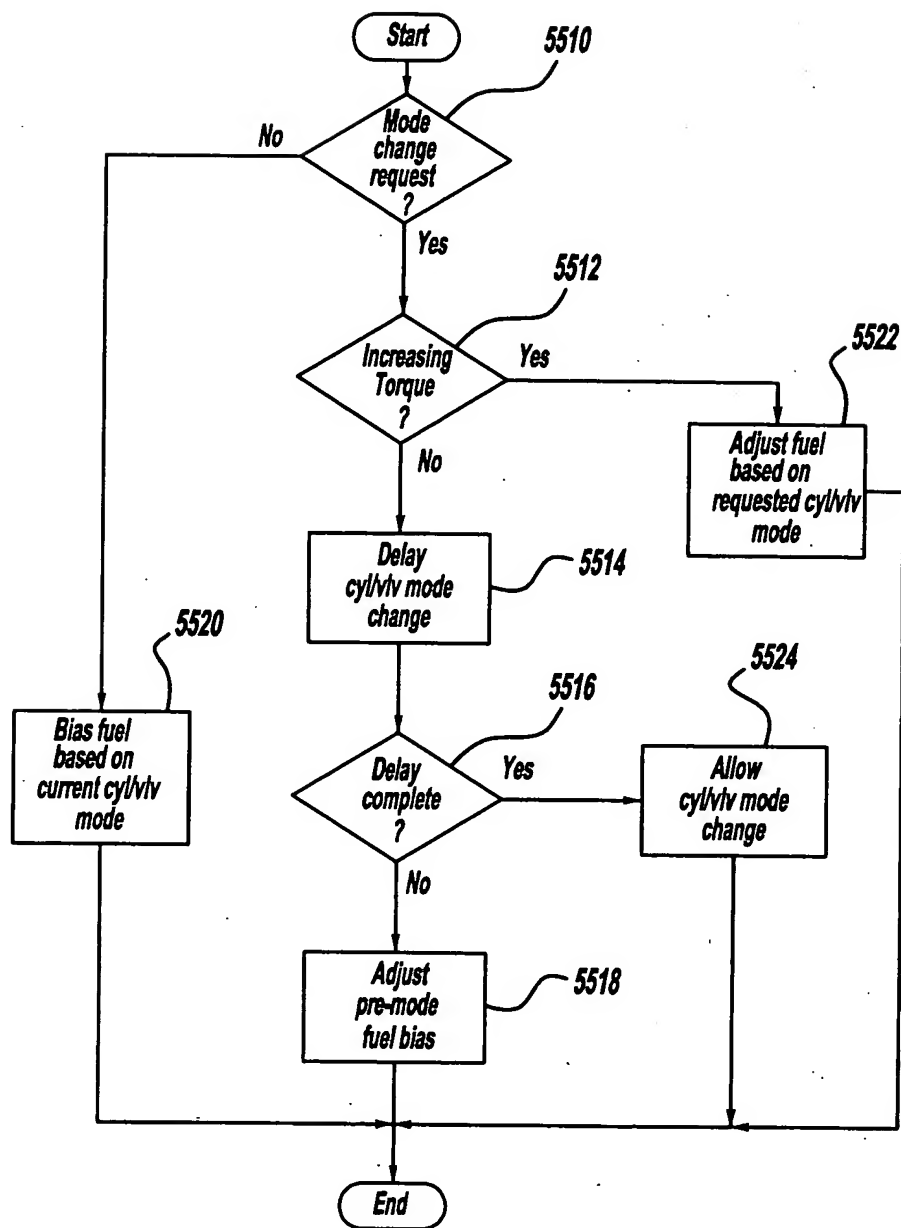
Crank Angle degrees
Exhaust Valve Timing From Start (electrical valve operation)

Cylinder piston position cyl 1 & 4

Cylinders 2 & 3

FIG - 53b

**FIG - 54**

**FIG - 55**